

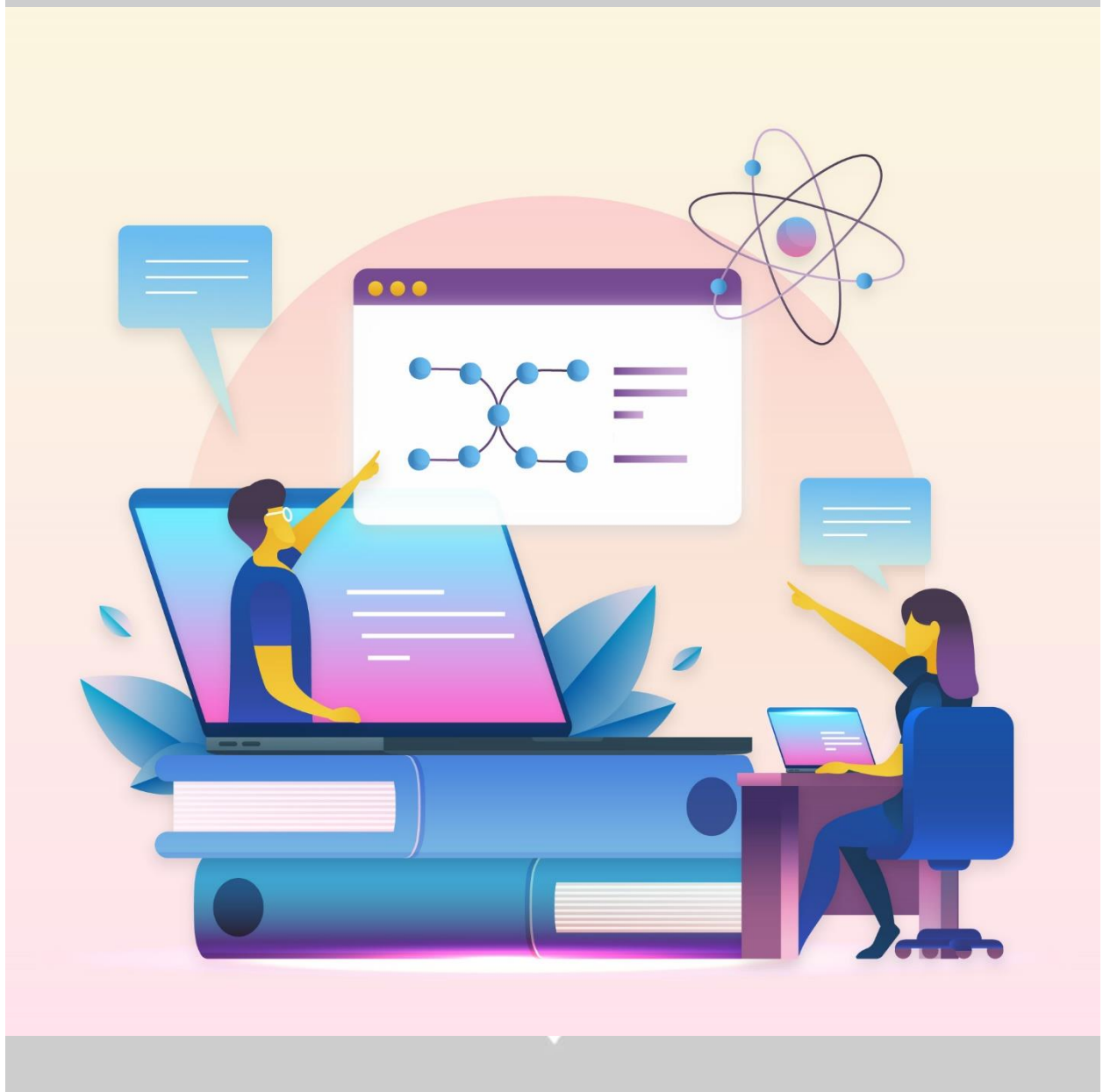
AWS Solutions Architect Associate

Exam Hand Notes



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AWS MCQS



AWS Associate Practice MCQs

Part 1 – Cloud Basics & AWS Global Infrastructure

Section 1: Cloud Computing vs On-Premises Computing (10 MCQs)

1. Which of the following is NOT an advantage of cloud computing over on-premises computing?

- A) Elasticity
- B) Capital expenditure
- C) On-demand resources
- D) Global reach

Answer: B

2. In on-premises computing, which type of cost is higher initially?

- A) Operational
- B) Capital
- C) Maintenance
- D) Variable

Answer: B

3. Which is a key benefit of cloud computing?

- A) Manual scaling
- B) Pay-as-you-go model
- C) Long procurement cycle
- D) Local availability only

Answer: B

4. What is the main difference between CapEx and OpEx models?

- A) CapEx is recurring; OpEx is one-time
- B) CapEx involves upfront investment; OpEx is pay-as-you-go
- C) CapEx is for services; OpEx is for assets
- D) CapEx is cloud-based; OpEx is hardware-based

Answer: B

5. Which of the following best describes elasticity in cloud computing?

- A) Ability to add or remove resources automatically
- B) Fixed resource allocation

- C) Pre-purchased capacity
- D) Manual hardware installation

Answer: A

6. **Which of the following is a disadvantage of on-premises computing?**

- A) Full control over data
- B) Low latency
- C) High upfront cost
- D) Compliance control

Answer: C

7. **Which AWS feature enables cost savings compared to on-premises setups?**

- A) Hardware leasing
- B) Auto Scaling
- C) Permanent infrastructure
- D) Manual capacity planning

Answer: B

8. **Which is an example of a fixed cost in on-premises computing?**

- A) Data transfer
- B) Hardware purchase
- C) Storage expansion
- D) Cloud subscription

Answer: B

9. **Which advantage of cloud computing helps businesses handle sudden spikes in demand?**

- A) Elasticity
- B) Scalability
- C) Fault tolerance
- D) Redundancy

Answer: A

10. **What is one major operational difference between cloud and on-premises computing?**

- A) Cloud requires physical server management
- B) On-premises uses serverless technology
- C) Cloud uses managed services, reducing admin overhead
- D) On-premises offers automatic patching

Answer: C

Section 2: Cloud Computing Service Models (10 MCQs)

11. Which of the following is a Platform as a Service (PaaS)?

- A) Amazon EC2
- B) AWS Elastic Beanstalk
- C) Amazon S3
- D) Amazon VPC

Answer: B

12. Which service model allows users to manage only applications and data?

- A) IaaS
- B) PaaS
- C) SaaS
- D) NaaS

Answer: B

13. Which service model gives the user least control over infrastructure?

- A) SaaS
- B) PaaS
- C) IaaS
- D) Hybrid

Answer: A

14. Amazon EC2 is an example of which service model?

- A) SaaS
- B) IaaS
- C) PaaS
- D) DaaS

Answer: B

15. AWS Lambda represents which type of service model?

- A) Serverless Computing
- B) IaaS
- C) PaaS
- D) SaaS

Answer: A

16. Which service model provides ready-to-use applications over the internet?

- A) SaaS
- B) PaaS
- C) IaaS

D) FaaS
Answer: A

17. Which layer is responsible for providing development tools in cloud service models?

- A) IaaS
 - B) SaaS
 - C) PaaS
 - D) DaaS
- Answer: C**

18. Which AWS service best represents SaaS?

- A) Amazon WorkSpaces
 - B) Amazon QuickSight
 - C) AWS Lambda
 - D) Amazon EC2
- Answer: B**

19. In IaaS, which component is managed by the customer?

- A) Networking
 - B) Storage
 - C) Applications and OS
 - D) Datacenter
- Answer: C**

20. In SaaS, who manages infrastructure and applications?

- A) Customer
 - B) Cloud provider
 - C) Both equally
 - D) Third-party developer
- Answer: B**

Section 3: Cloud Deployment Models (10 MCQs)

21. Which deployment model involves exclusive use by a single organization?

- A) Public Cloud
 - B) Private Cloud
 - C) Hybrid Cloud
 - D) Multi-Cloud
- Answer: B**

22. **AWS primarily operates under which cloud deployment model?**

- A) Private Cloud
- B) Public Cloud
- C) Hybrid Cloud
- D) Community Cloud

Answer: B

23. **A company using both AWS cloud and on-premises data center is following which model?**

- A) Multi-Cloud
- B) Hybrid Cloud
- C) Community Cloud
- D) Dedicated Cloud

Answer: B

24. **Which deployment model combines multiple public clouds?**

- A) Hybrid Cloud
- B) Private Cloud
- C) Multi-Cloud
- D) Edge Cloud

Answer: C

25. **Which cloud model provides the most control and customization?**

- A) Public
- B) Private
- C) Hybrid
- D) Community

Answer: B

26. **Which deployment model is best for sensitive government workloads?**

- A) Public Cloud
- B) Private Cloud
- C) Hybrid Cloud
- D) Multi-Cloud

Answer: B

27. **Which deployment model allows flexibility and cost optimization by mixing environments?**

- A) Hybrid Cloud
- B) Private Cloud
- C) Multi-Cloud

D) Community Cloud

Answer: A

28. Which of these is a real-world example of a hybrid setup?

- A) EC2 + S3
- B) AWS + On-premise servers connected via VPN
- C) AWS + Azure both used independently
- D) AWS CloudFront only

Answer: B

29. Which deployment model is managed by several organizations with a common interest?

- A) Public
- B) Private
- C) Hybrid
- D) Community

Answer: D

30. Which deployment model gives the least infrastructure control to the user?

- A) Public Cloud
- B) Private Cloud
- C) Hybrid
- D) Community

Answer: A

Section 4: AWS Cloud & Features (10 MCQs)

31. Which of the following is a key advantage of AWS Cloud?

- A) Pay-per-license model
- B) Global infrastructure
- C) Manual resource management
- D) Local-only scalability

Answer: B

32. Which of the following is NOT an AWS Cloud feature?

- A) Elasticity
- B) Reliability
- C) Physical server purchase
- D) Scalability

Answer: C

33. Which AWS feature helps reduce cost by using idle EC2 capacity?

- A) Reserved Instances
- B) On-Demand Instances
- C) Spot Instances
- D) Dedicated Hosts

Answer: C

34. Which AWS service provides monitoring and metrics?

- A) CloudFormation
- B) CloudWatch
- C) CloudTrail
- D) Config

Answer: B

35. Which AWS tool provides a dashboard for account and billing information?

- A) AWS Cost Explorer
- B) AWS Inspector
- C) CloudTrail
- D) AWS Shield

Answer: A

36. What is the shared responsibility model in AWS?

- A) AWS secures everything
- B) Customer secures physical hardware
- C) AWS and customer share security tasks
- D) Only customers are responsible for compliance

Answer: C

37. Which AWS feature allows you to replicate workloads across regions?

- A) Auto Scaling
- B) Multi-AZ Deployment
- C) Cross-Region Replication
- D) Elastic Load Balancing

Answer: C

38. Which AWS service helps you automate infrastructure provisioning?

- A) CloudTrail
- B) CloudFormation
- C) CloudWatch
- D) Cost Explorer

Answer: B

39. Which AWS service tracks user activity and API calls?

- A) CloudWatch
- B) CloudTrail
- C) Config
- D) Trusted Advisor

Answer: B

40. Which AWS tool gives best-practice recommendations for cost and performance optimization?

- A) CloudTrail
- B) Trusted Advisor
- C) Config
- D) CloudWatch

Answer: B

Section 5: AWS Global Infrastructure (10 MCQs)

41. An AWS Region consists of how many Availability Zones (AZs)?

- A) 1
- B) 2 or more
- C) Exactly 3
- D) 10 or more

Answer: B

42. What are AWS Availability Zones?

- A) Logical data centers within a Region
- B) Independent regions
- C) Edge locations
- D) Backup centers

Answer: A

43. What is an AWS Edge Location used for?

- A) Hosting EC2 instances
- B) Content delivery through CloudFront
- C) Storing RDS backups
- D) Hosting VPC endpoints

Answer: B

44. Which AWS service uses edge locations extensively?

- A) CloudTrail
- B) CloudFront
- C) Lambda
- D) S3 Glacier

Answer: B

45. What is a Local Zone in AWS?

- A) A smaller data center near users for low-latency
- B) An edge location
- C) A main AWS region
- D) A VPN tunnel

Answer: A

46. Which statement about AWS Regions is true?

- A) Each Region is isolated from others
- B) All Regions share data automatically
- C) Regions can't be selected by the user
- D) Regions depend on edge locations

Answer: A

47. Which AWS component ensures fault tolerance within a region?

- A) Edge Locations
- B) Availability Zones
- C) Local Zones
- D) Global Accelerator

Answer: B

48. Which AWS service allows you to deploy applications across multiple Regions?

- A) CloudFormation
- B) CloudFront
- C) Route 53
- D) EC2

Answer: C

49. What is the main benefit of using multiple AWS Regions?

- A) Faster instance provisioning
- B) Improved global redundancy and latency
- C) Cheaper EC2 instances
- D) Easier IAM management

Answer: B

50. **How does AWS ensure high availability globally?**

- A) By hosting in one large data center
- B) By using multiple isolated Regions and AZs
- C) By relying on customer redundancy
- D) By reducing service diversity

Answer: B

Part 2 – IAM & EC2

Section 1: AWS Identity and Access Management (IAM) (25 MCQs)

1. **What is the main purpose of IAM in AWS?**

- A) To monitor EC2 usage
- B) To manage users and access to AWS services
- C) To create S3 buckets
- D) To configure billing alerts

Answer: B

2. **Which IAM entity represents a human user or an application that interacts with AWS?**

- A) Role
- B) Policy
- C) User
- D) Group

Answer: C

3. **Which of the following is true about IAM users?**

- A) Each user has a unique username within an account
- B) IAM users share one password
- C) IAM users automatically have admin privileges
- D) Users can only access the AWS Management Console

Answer: A

4. **What does an IAM group contain?**

- A) Policies
- B) Roles
- C) Users
- D) Access keys

Answer: C

5. **Which of the following is the best practice for granting permissions in IAM?**

- A) Assign policies directly to users
- B) Use groups and attach policies to them
- C) Give full admin rights to all users
- D) Share root credentials

Answer: B

6. **What are IAM policies written in?**

- A) JSON
- B) YAML
- C) XML
- D) CSV

Answer: A

7. **Which IAM entity is used to delegate access to AWS resources without sharing credentials?**

- A) Group
- B) Role
- C) User
- D) Policy

Answer: B

8. **IAM roles are commonly used with which AWS service for secure access?**

- A) EC2
- B) Route 53
- C) CloudFront
- D) S3 Glacier

Answer: A

9. **What is the default permission for a new IAM user?**

- A) Full access
- B) Read-only access
- C) No permissions
- D) Billing access

Answer: C

10. **Which of the following best describes IAM policies?**

- A) A set of permissions defining what actions are allowed or denied
- B) A list of users and groups
- C) A data storage definition
- D) A billing structure

Answer: A

11. Which IAM component is used to apply common permissions to multiple users?

- A) Roles
- B) Groups
- C) Users
- D) Access keys

Answer: B

12. What is the recommended way to access AWS programmatically?

- A) Root credentials
- B) IAM user access keys
- C) IAM role
- D) Console login

Answer: C

13. What is the AWS root user?

- A) The user created automatically when the AWS account is created
- B) A service account
- C) A group of admin users
- D) An IAM role

Answer: A

14. Which security feature of IAM provides temporary credentials?

- A) IAM groups
- B) IAM roles
- C) IAM policies
- D) IAM MFA

Answer: B

15. What is the benefit of enabling MFA on IAM users?

- A) Easier password resets
- B) Protection against unauthorized access
- C) Faster sign-in process
- D) Unlimited console logins

Answer: B

16. Which IAM entity cannot have long-term credentials (passwords or access keys)?

- A) User
- B) Role
- C) Group
- D) Administrator

Answer: B

17. Which service records all IAM-related API calls?

- A) CloudWatch
- B) CloudTrail
- C) AWS Config
- D) Trusted Advisor

Answer: B

18. What happens if you delete an IAM policy that's attached to a user?

- A) The user retains access
- B) The user loses access to resources controlled by that policy
- C) The policy is automatically recreated
- D) The user is deleted

Answer: B

19. Which of the following IAM features allows password policy enforcement?

- A) IAM roles
- B) Account settings
- C) Security groups
- D) AWS Organizations

Answer: B

20. Which type of policy grants permissions across multiple AWS accounts?

- A) Inline policy
- B) Managed policy
- C) Resource-based policy
- D) User policy

Answer: C

21. Which service integrates with IAM for federated identity access?

- A) AWS Cognito
- B) CloudFormation
- C) EC2
- D) CloudWatch

Answer: A

22. Which IAM entity can assume a role in another AWS account?

- A) IAM role
- B) IAM user
- C) Group
- D) Policy

Answer: A

23. What does the "Principal" element in an IAM policy specify?

- A) Who the policy applies to
- B) The allowed actions
- C) The target resources
- D) The condition for access

Answer: A

24. What is the maximum number of IAM users per AWS account by default?

- A) 1000
- B) 5000
- C) 10,000
- D) Unlimited

Answer: A

25. Which AWS service can analyze IAM policies for least privilege recommendations?

- A) IAM Access Analyzer
- B) AWS Inspector
- C) CloudTrail
- D) Config

Answer: A

Section 2: Amazon Elastic Compute Cloud (EC2) (25 MCQs)

26. What does EC2 stand for?

- A) Elastic Cloud Compute
- B) Elastic Compute Cloud
- C) Enterprise Compute Cloud
- D) Elastic Capacity Compute

Answer: B

27. Which EC2 instance type is most suitable for general-purpose workloads?

- A) M-Series
- B) C-Series
- C) R-Series
- D) G-Series

Answer: A

28. Which EC2 instance type is optimized for compute-intensive workloads?

- A) M-Series
- B) C-Series
- C) T-Series
- D) R-Series

Answer: B

29. Which pricing option offers the biggest discount for a 1–3 year commitment?

- A) On-Demand
- B) Reserved Instances
- C) Spot Instances
- D) Dedicated Hosts

Answer: B

30. Which pricing model allows bidding for unused EC2 capacity?

- A) Reserved
- B) On-Demand
- C) Spot
- D) Savings Plan

Answer: C

31. What is the default state of a newly launched EC2 instance's storage?

- A) Encrypted
- B) Unencrypted (unless set)
- C) Shared
- D) Temporary only

Answer: B

32. Which AWS service provides virtual machine instances?

- A) EC2
- B) EBS
- C) S3
- D) VPC

Answer: A

33. What is the maximum number of Elastic IPs per Region by default?

- A) 1
- B) 5
- C) 10
- D) Unlimited

Answer: B

34. Which AWS feature allows EC2 instances to automatically recover after hardware failure?

- A) Auto Scaling
- B) EC2 Auto Recovery
- C) Load Balancing
- D) Fault Tolerance

Answer: B

35. What is the main use of Amazon Machine Images (AMIs)?

- A) To monitor EC2 instances
- B) To launch pre-configured EC2 instances
- C) To store backups
- D) To control IAM policies

Answer: B

36. Which of the following is NOT part of an EC2 instance?

- A) Instance type
- B) Security group
- C) EBS volume
- D) Availability Zone

Answer: D

37. What is the default storage for an EC2 instance root volume?

- A) S3
- B) EBS
- C) Glacier
- D) DynamoDB

Answer: B

38. Which EC2 feature allows you to attach or detach network interfaces?

- A) Elastic IP
- B) ENI (Elastic Network Interface)
- C) EBS
- D) IAM role

Answer: B

39. How can you achieve high availability for an EC2 application?

- A) Launch in multiple AZs
- B) Use larger instance types
- C) Add more EBS volumes
- D) Increase CPU credits

Answer: A

40. Which EC2 instance type is best for memory-intensive workloads?

- A) M-Series
- B) C-Series
- C) R-Series
- D) T-Series

Answer: C

41. Which of the following allows you to connect to an EC2 instance using SSH?

- A) Security group
- B) Key pair (.pem file)
- C) Elastic IP
- D) IAM policy

Answer: B

42. Which AWS service can create snapshots of EC2 volumes?

- A) EBS
- B) CloudFormation
- C) S3
- D) CloudTrail

Answer: A

43. Which EC2 feature automatically replaces unhealthy instances?

- A) Elastic Load Balancer
- B) Auto Scaling Group
- C) CloudFormation Stack
- D) EBS Snapshot

Answer: B

44. What is the purpose of a security group in EC2?

- A) Acts as a virtual firewall controlling inbound/outbound traffic
- B) Controls IAM access
- C) Controls billing
- D) Encrypts storage volumes

Answer: A

45. Which instance type offers a burstable CPU model?

- A) T-Series
- B) C-Series
- C) M-Series
- D) P-Series

Answer: A

46. Which EC2 instance pricing option is ideal for unpredictable workloads?

- A) On-Demand
- B) Reserved
- C) Spot
- D) Dedicated Host

Answer: A

47. Where are EC2 snapshots stored?

- A) EBS
- B) S3
- C) Glacier
- D) DynamoDB

Answer: B

48. What's the purpose of EC2 User Data?

- A) To configure instance settings at launch
- B) To store user credentials
- C) To manage IAM policies
- D) To monitor usage

Answer: A

49. What type of IP address remains associated with an instance after stop/start?

- A) Private IP
- B) Public IP
- C) Elastic IP
- D) Dynamic IP

Answer: C

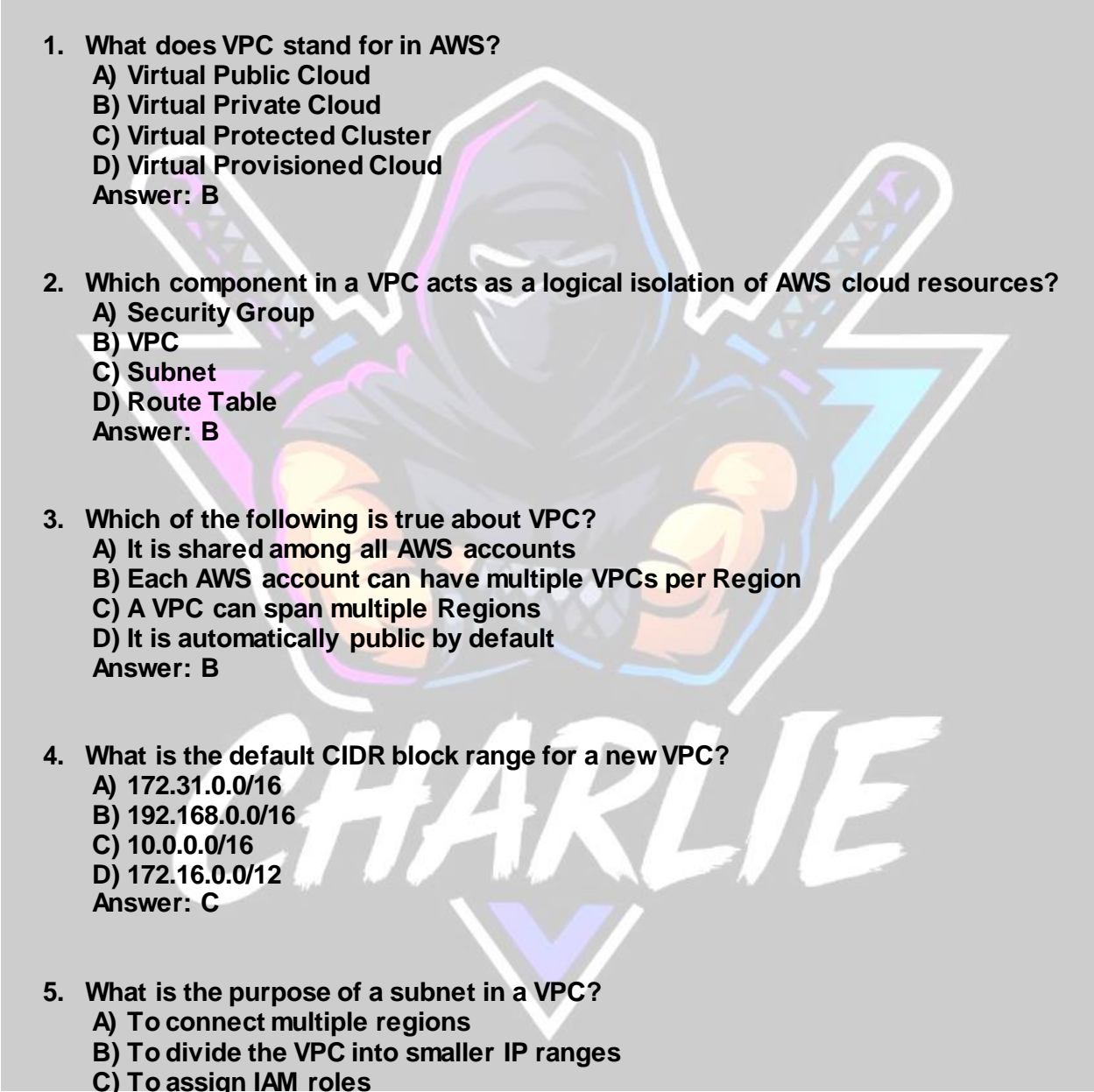
50. Which AWS service can monitor CPU utilization of EC2 instances?

- A) CloudTrail
- B) CloudWatch
- C) Config
- D) Trusted Advisor

Answer: B

Part 3 – AWS Networking: VPC, NAT Gateway, Transit Gateway, Peering, Endpoints, Bastion Host

Section 1: Amazon Virtual Private Cloud (VPC) (20 MCQs)

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1. What does VPC stand for in AWS?
A) Virtual Public Cloud
B) Virtual Private Cloud
C) Virtual Protected Cluster
D) Virtual Provisioned Cloud
Answer: B
 2. Which component in a VPC acts as a logical isolation of AWS cloud resources?
A) Security Group
B) VPC
C) Subnet
D) Route Table
Answer: B
 3. Which of the following is true about VPC?
A) It is shared among all AWS accounts
B) Each AWS account can have multiple VPCs per Region
C) A VPC can span multiple Regions
D) It is automatically public by default
Answer: B
 4. What is the default CIDR block range for a new VPC?
A) 172.31.0.0/16
B) 192.168.0.0/16
C) 10.0.0.0/16
D) 172.16.0.0/12
Answer: C
 5. What is the purpose of a subnet in a VPC?
A) To connect multiple regions
B) To divide the VPC into smaller IP ranges
C) To assign IAM roles
D) To manage EC2 billing
Answer: B

6. What is the main difference between public and private subnets?
- A) Public subnets connect to the internet through an Internet Gateway
 - B) Private subnets always have Elastic IPs
 - C) Public subnets are encrypted
 - D) Private subnets can't have route tables
- Answer: A

7. Which AWS resource allows a VPC to communicate with the internet?
- A) NAT Gateway
 - B) Internet Gateway
 - C) VPC Endpoint
 - D) Transit Gateway
- Answer: B

8. Which VPC component is used to control routing between subnets?
- A) Route Table
 - B) Security Group
 - C) ACL
 - D) IAM Policy
- Answer: A

9. What is the default number of VPCs per Region in an AWS account?
- A) 1
 - B) 5
 - C) 10
 - D) 50
- Answer: B

10. Which AWS service allows monitoring network traffic in a VPC?
- A) CloudWatch Logs
 - B) VPC Flow Logs
 - C) CloudTrail
 - D) Route 53
- Answer: B

11. What happens if you delete the main route table of a VPC?
- A) The VPC is deleted
 - B) AWS prevents deletion of the main route table
 - C) Routes are moved to subnets automatically
 - D) It deletes all subnets
- Answer: B

12. Which CIDR block range is NOT allowed in a VPC?

- A) 10.0.0.0/16
- B) 172.31.0.0/16
- C) 192.168.0.0/16
- D) 8.8.8.0/24

Answer: D

13. Which component is required for DNS resolution in a VPC?

- A) DHCP Options Set
- B) NAT Gateway
- C) Security Group
- D) Network ACL

Answer: A

14. What's the smallest subnet mask you can assign to a subnet in a VPC?

- A) /16
- B) /28
- C) /29
- D) /30

Answer: B

15. Can two VPCs in different Regions communicate directly by default?

- A) Yes
- B) No
- C) Only if they use private subnets
- D) Only using NAT Gateway

Answer: B

16. How many IP addresses in each subnet are reserved by AWS?

- A) 2
- B) 3
- C) 4
- D) 5

Answer: D

17. What is the maximum CIDR size allowed for a VPC?

- A) /8
- B) /16
- C) /24
- D) /28

Answer: B

18. What is the minimum CIDR size allowed for a VPC?

- A) /28
- B) /26
- C) /24
- D) /16

Answer: A

19. What is the default route for a public subnet?

- A) 0.0.0.0/0 → Internet Gateway
- B) 10.0.0.0/16 → Local
- C) 0.0.0.0/0 → NAT Gateway
- D) 172.16.0.0/12 → Local

Answer: A

20. Which tool can automate VPC and subnet creation?

- A) CloudFormation
- B) CloudTrail
- C) CloudWatch
- D) Trusted Advisor

Answer: A

Section 2: NAT Gateway (8 MCQs)

21. What does NAT stand for?

- A) Network Access Table
- B) Network Address Translation
- C) Network Allocation Tool
- D) Network Address Tracker

Answer: B

22. What is the main purpose of a NAT Gateway?

- A) To allow instances in private subnets to access the internet
- B) To allow internet to access private instances
- C) To encrypt traffic between VPCs
- D) To host DNS servers

Answer: A

23. Where should a NAT Gateway be placed?

- A) In a private subnet
- B) In a public subnet

- C) In any subnet
 - D) In a Transit Gateway
- Answer: B

24. Which resource must be attached to a public subnet for NAT Gateway to work?

- A) Internet Gateway
- B) Route Table
- C) VPC Endpoint
- D) Elastic Network Interface

Answer: A

25. Can NAT Gateway receive inbound connections from the internet?

- A) Yes
- B) No
- C) Only from peered VPCs
- D) Only from same subnet

Answer: B

26. What happens if a NAT Gateway's AZ fails?

- A) Traffic automatically reroutes
- B) You must create another NAT Gateway in another AZ
- C) It automatically replicates
- D) NAT Gateway is region-wide

Answer: B

27. Which pricing model applies to NAT Gateway?

- A) Pay-per-hour only
- B) Pay for usage (data processed + hourly rate)
- C) Flat rate monthly
- D) Free

Answer: B

28. Which AWS feature replaces the older NAT instance option?

- A) NAT Gateway
- B) VPC Endpoint
- C) Elastic IP
- D) Transit Gateway

Answer: A

Section 3: Transit Gateway (8 MCQs)

29. What is the main purpose of a Transit Gateway?

- A) To connect multiple VPCs and on-prem networks
- B) To host EC2 instances
- C) To connect S3 buckets
- D) To filter network traffic

Answer: A

30. Which service does AWS Transit Gateway replace or simplify?

- A) VPC Peering
- B) Route 53
- C) Direct Connect
- D) NAT Gateway

Answer: A

31. Can Transit Gateway connect to on-prem networks?

- A) No
- B) Yes, through VPN or Direct Connect
- C) Only via NAT
- D) Only if same Region

Answer: B

32. Which AWS Region scope does Transit Gateway have?

- A) Regional
- B) Global
- C) Zonal
- D) Per VPC

Answer: A

33. Transit Gateway supports which routing type?

- A) Static only
- B) Dynamic and static routing
- C) Manual routing only
- D) None

Answer: B

34. Which protocol is used by Transit Gateway for VPN connections?

- A) HTTPS
- B) IPsec
- C) SSH
- D) BGP only

Answer: B

35. Which AWS service can integrate directly with Transit Gateway for hybrid networking?

- A) Direct Connect**
- B) CloudWatch**
- C) Lambda**
- D) S3**

Answer: A

36. Transit Gateway is best suited for which type of architecture?

- A) Multi-VPC Hub-and-Spoke architecture**
- B) Single VPC setup**
- C) EC2-only networks**
- D) Static IP routing**

Answer: A

Section 4: VPC Peering (6 MCQs)

37. What is a VPC Peering connection used for?

- A) To connect two VPCs privately**
- B) To connect EC2 instances to S3**
- C) To access the internet**
- D) To share IAM policies**

Answer: A

38. Can VPC Peering be established between different AWS accounts?

- A) Yes**
- B) No**
- C) Only in same Region**
- D) Only via Transit Gateway**

Answer: A

39. Does VPC Peering support transitive routing?

- A) Yes**
- B) No**
- C) Only through NAT**
- D) Only in private subnets**

Answer: B

40. Which AWS service is required to manage routing between peered VPCs?

- A) Route Table**
- B) Internet Gateway**
- C) NAT Gateway**
- D) Transit Gateway**

Answer: A

41. What must be unique between two VPCs to establish peering?

- A) Region**
- B) CIDR blocks (non-overlapping)**
- C) Account ID**
- D) AZ name**

Answer: B

42. Can peered VPCs communicate across Regions?

- A) Yes, using inter-region VPC peering**
- B) No**
- C) Only within same Region**
- D) Only using Transit Gateway**

Answer: A

Section 5: VPC Endpoints (4 MCQs)

43. What is a VPC Endpoint used for?

- A) To connect to AWS services privately without using the internet**
- B) To connect to EC2 over the internet**
- C) To host private DNS**
- D) To monitor logs**

Answer: A

44. Which two types of VPC Endpoints are available?

- A) Gateway and Interface**
- B) Public and Private**
- C) NAT and Direct Connect**
- D) Route and Static**

Answer: A

45. Which type of VPC Endpoint is used for S3 and DynamoDB?

- A) Gateway Endpoint**
- B) Interface Endpoint**

- C) NAT Endpoint
 - D) Route Endpoint
- Answer: A

46. Which AWS service uses Interface Endpoints (powered by PrivateLink)?
- A) EC2
 - B) S3
 - C) SNS
 - D) DynamoDB
- Answer: C

Section 6: Bastion Host (4 MCQs)

47. What is a Bastion Host used for?
- A) Securely connect to private EC2 instances
 - B) Host public web applications
 - C) Manage IAM roles
 - D) Store database backups
- Answer: A
48. Where is a Bastion Host typically deployed?
- A) Private subnet
 - B) Public subnet
 - C) Transit Gateway
 - D) Direct Connect
- Answer: B
49. Which security rule should a Bastion Host have?
- A) SSH allowed from specific IPs only
 - B) Open to all ports
 - C) Deny all inbound
 - D) Allow all outbound
- Answer: A
50. Which AWS service can replace a traditional Bastion Host?
- A) AWS Systems Manager Session Manager
 - B) Direct Connect
 - C) NAT Gateway
 - D) CloudFront
- Answer: A

Part 4: AWS Load Balancer, ASG, Target Groups, Security Groups, NACL & S3

Section 1: AWS Load Balancer (ALB, NLB, CLB)

1. Which type of AWS Load Balancer operates at Layer 7 of the OSI model?

- A. Classic Load Balancer
- B. Network Load Balancer
- C. Application Load Balancer
- D. Gateway Load Balancer

✓ Answer: C

💡 *Explanation:* ALB works at the application layer (Layer 7) and routes requests based on content.

2. Which Load Balancer is best for TCP and UDP traffic with ultra-low latency?

- A. ALB
- B. NLB
- C. CLB
- D. Gateway LB

✓ Answer: B

💡 *Explanation:* Network Load Balancer works at Layer 4 and handles millions of requests with low latency.

3. Which Load Balancer supports WebSocket and HTTP/2 natively?

- A. ALB
- B. NLB
- C. CLB
- D. ELB

✓ Answer: A

4. What is the default health check protocol for an Application Load Balancer?

- A. ICMP
- B. TCP
- C. HTTP/HTTPS
- D. UDP

✓ Answer: C

5. A company needs to route traffic based on the hostname in the URL (e.g., api.company.com vs app.company.com). Which LB should they use?

- A. CLB

- B. ALB
- C. NLB
- D. Gateway LB

✓ Answer: B

6. Which AWS Load Balancer provides static IP addresses per Availability Zone?

- A. ALB
- B. NLB
- C. CLB
- D. Application Gateway

✓ Answer: B

7. What's the maximum timeout for idle connections in ALB by default?

- A. 30 seconds
- B. 60 seconds
- C. 300 seconds
- D. 400 seconds

✓ Answer: C

8. Gateway Load Balancer is mainly used for:

- A. Distributing HTTP traffic
- B. Distributing Layer 4 TCP traffic
- C. Deploying and managing third-party virtual appliances
- D. Routing API calls

✓ Answer: C

9. Which Load Balancer supports SSL termination?

- A. Only CLB
- B. Only NLB
- C. ALB and CLB
- D. ALB, NLB (TCP TLS), CLB

✓ Answer: D

10. What does "cross-zone load balancing" mean?

- A. Traffic stays within one zone
- B. Traffic is distributed evenly across all zones
- C. Traffic is encrypted
- D. Traffic is limited to one subnet

✓ Answer: B

Section 2: Auto Scaling Groups (ASG)

11. Auto Scaling Group ensures:

- A. Constant number of EC2 instances
- B. Manual scaling only

- C. Predictable traffic
- D. Static compute resources

✓ Answer: A

12. Which policy type automatically increases instance count when CPU exceeds threshold?

- A. Manual scaling
- B. Scheduled scaling
- C. Dynamic scaling
- D. Predictive scaling

✓ Answer: C

13. Which launch type defines how new EC2 instances are configured in ASG?

- A. IAM Role
- B. Launch Template / Launch Configuration
- C. AMI
- D. Security Group

✓ Answer: B

14. Predictive scaling in ASG uses:

- A. Machine learning
- B. CPU metrics only
- C. Manual input
- D. Cost analysis

✓ Answer: A

15. What happens when an instance in ASG fails a health check?

- A. Nothing
- B. It is stopped
- C. It is replaced automatically
- D. Alarm is triggered

✓ Answer: C

16. Minimum, maximum, and desired capacity in ASG define:

- A. EC2 instance roles
- B. Scaling limits
- C. CPU usage
- D. Elastic IP limits

✓ Answer: B

17. Which AWS service monitors metrics for ASG?

- A. CloudFormation
- B. CloudTrail
- C. CloudWatch
- D. GuardDuty

✓ Answer: C

18. Which of the following is NOT a scaling policy?

- A. Target tracking
- B. Step scaling
- C. Scheduled scaling
- D. Network scaling

✓ Answer: D

19. When you delete an ASG, what happens to its instances?

- A. They are stopped
- B. They are deleted (by default)
- C. They continue running
- D. They are snapshot

✓ Answer: B

20. ASG can be integrated with:

- A. Load Balancers
- B. S3
- C. RDS
- D. EFS

✓ Answer: A

Section 3: Target Groups

21. Target Group is used with:

- A. CloudFront
- B. Load Balancer
- C. Route 53
- D. VPC Peering

✓ Answer: B

22. Which Load Balancer supports IP-based targets?

- A. CLB
- B. ALB & NLB
- C. Only ALB
- D. None

✓ Answer: B

23. Targets in a Target Group can be:

- A. EC2 instances
- B. IP addresses
- C. Lambda functions
- D. All of the above

✓ Answer: D

24. A Target Group performs health checks at:

- A. Load Balancer level**
- B. Instance level**
- C. Target Group level**
- D. Both A and C**

✓ **Answer: D**

25. Can a single Target Group be used by multiple Load Balancers?

- A. No**
- B. Yes**

✓ **Answer: B**

Section 4: Security Groups & NACLs

26. Security Groups operate at which level?

- A. Subnet level**
- B. Instance level**
- C. Region level**
- D. Account level**

✓ **Answer: B**

27. NACL operates at which level?

- A. VPC**
- B. Subnet**
- C. EC2 instance**
- D. Region**

✓ **Answer: B**

28. Security Groups are:

- A. Stateless**
- B. Stateful**

✓ **Answer: B**

29. Network ACLs are:

- A. Stateful**
- B. Stateless**

✓ **Answer: B**

30. By default, Security Groups allow:

- A. All inbound traffic**
- B. All outbound traffic**
- C. No outbound traffic**

✓ **Answer: B**

31. Can a single EC2 instance have multiple Security Groups?

- A. No**
- B. Yes**

✓ Answer: B

32. What is the default rule for new NACLs?

- A. Allow all**
- B. Deny all**

✓ Answer: B

33. Inbound rules in Security Group are evaluated:

- A. Sequentially**
- B. As a whole (all must pass)**
- C. Independently and permissively**

✓ Answer: C

34. What happens if there are conflicting rules between NACL and SG?

- A. SG wins**
- B. NACL wins**
- C. The more restrictive rule applies**

✓ Answer: C

35. Can NACLs block specific IPs?

- A. Yes**
- B. No**

✓ Answer: A

Section 5: Amazon S3

36. What does S3 stand for?

- A. Simple Storage Service**
- B. Secure Storage Service**

✓ Answer: A

37. Maximum size of a single S3 object?

- A. 1 TB**
- B. 5 GB**
- C. 5 TB**

✓ Answer: C

38. What is the maximum size of an object upload in a single PUT request?

- A. 5 GB**
- B. 5 TB**

✓ Answer: A

39. Which feature allows versioning of objects in S3?

- A. Lifecycle rules
- B. Object Lock
- C. Versioning

✓ Answer: C

40. S3 bucket names must be:

- A. Globally unique
- B. Region-specific

✓ Answer: A

41. Which S3 storage class is best for infrequent access?

- A. Standard
- B. Glacier Deep Archive
- C. Standard-IA

✓ Answer: C

42. What's the durability of S3 Standard storage?

- A. 99.9%
- B. 99.99%
- C. 99.999999999% (11 9's)

✓ Answer: C

43. S3 Transfer Acceleration uses:

- A. CloudFront Edge Locations
- B. Direct Connect

✓ Answer: A

44. To allow public access to a file, you must modify:

- A. IAM policy
- B. Bucket Policy
- C. Security Group

✓ Answer: B

45. S3 Object Lock prevents:

- A. Deletion
- B. Modification
- C. Both

✓ Answer: C

46. Which AWS service can automatically move old data to cheaper storage?

- A. CloudTrail
- B. Lifecycle rules

✓ Answer: B

47. What's S3 event notification used for?

- A. Triggering Lambda or SNS

B. Encryption

✓ Answer: A

48. Default encryption can be set at:

A. Object level

B. Bucket level

✓ Answer: B

49. Which access method supports HTTPS for S3 objects?

A. REST API

B. AWS SDK

C. Console

D. All of the above

✓ Answer: D

50. Which feature ensures S3 data is protected across multiple AZs?

A. Replication

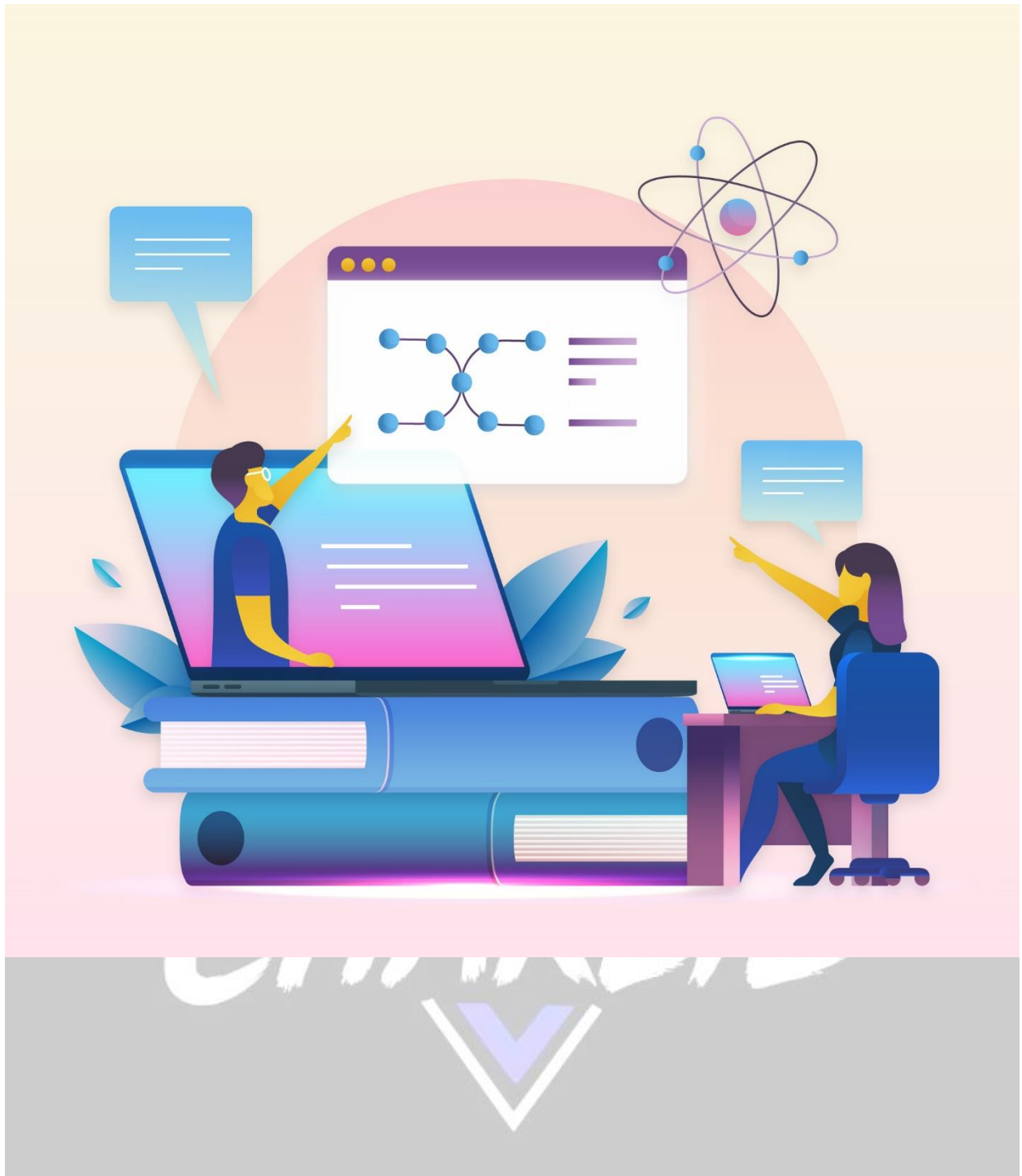
B. Cross-AZ redundancy

✓ Answer: B

AWS Hand Notes



CHARLIE



Practice Exam 1: Answers and Explanations

1. AWS allows users to manage their resources using a web based user interface. What is the name of this interface?

Answer: D. AWS Management Console.

- **Explanation:** The **AWS Management Console** is the web-based interface for managing and accessing all AWS services. The AWS CLI is a command-line tool, and the API/SDKs are for programmatic access.

2. Which of the following is an example of horizontal scaling in the AWS Cloud?

Answer: D. Adding more EC2 instances of the same size to handle an increase in traffic.

- **Explanation: Horizontal scaling** means adding more computing units (like EC2 instances) to distribute the load. Options A, B, and C describe **vertical scaling**, which means increasing the resources (CPU, RAM, size) of a single existing unit.

3. You have noticed that several critical Amazon EC2 instances have been terminated. Which of the following AWS services would help you determine who took this action?

Answer: B. AWS CloudTrail.

- **Explanation: AWS CloudTrail** records all API calls and account activity (actions taken by a user, role, or AWS service) across your AWS infrastructure, helping you with governance, compliance, operational auditing, and risk auditing.

4. Which of the below options are related to the reliability of AWS? (Choose TWO)

Answer: B. Automatically provisioning new resources to meet demand. and E. Ability to recover quickly from failures.

- **Explanation: Reliability** is the ability of a system to recover from infrastructure or service disruptions. This includes automatically provisioning resources (**elasticity**) and having recovery processes in place (i.e., multiple Availability Zones, backups). Option A is related to security, C is about global reach, and D is about support/compensation, not reliability design.

5. Which statement is true regarding the AWS Shared Responsibility Model?

Answer: A. Responsibilities vary depending on the services used.

- **Explanation:** The level of responsibility for the customer and AWS depends on the service model (IaaS, PaaS, SaaS). For IaaS (like EC2), the customer has more responsibility; for managed services (like DynamoDB), AWS takes on more.

6. You have set up consolidated billing for several AWS accounts. One of the accounts has purchased a number of reserved instances for 3 years. Which of the following is true regarding this scenario?

Answer: B. All accounts can receive the hourly cost benefit of the Reserved Instances.

- **Explanation:** With **consolidated billing** in AWS Organizations, the billing benefits, including Reserved Instance discounts, are shared across all accounts in the organization, not just the master account.

7. A company has developed an eCommerce web application in AWS. What should they do to ensure that the application has the highest level of availability?

Answer: C. Deploy the application across multiple Regions and Availability Zones.

- **Explanation:** To achieve the **highest level of availability** and disaster recovery, an application should be deployed across multiple, geographically distant **Regions**, and within each region, across multiple **Availability Zones**. Edge Locations are for content delivery and caching, not core application deployment.

8. What does AWS Snowball provide? (Choose TWO)

Answer: D. An Exabyte-scale data transfer service that allows you to move extremely large amounts of data to AWS. and E. Secure transfer of large amounts of data into and out of the AWS.

- **Explanation:** **AWS Snowball** is a petabyte-scale data transport solution that uses secure appliances to transfer large amounts of data into and out of the AWS Cloud. Option A describes Snowball Edge.

9. A company has an AWS Enterprise Support plan. They want quick and efficient guidance with their billing and account inquiries. Which of the following should the company use?

Answer: B. AWS Support Concierge.

- **Explanation:** The **AWS Support Concierge** team is the billing and account expert team available for customers with the Enterprise support plan.

10. A Japanese company hosts their applications on Amazon EC2 instances in the Tokyo Region. The company has opened new branches in the United States, and the US users are complaining of high latency. What can the company do to reduce latency for the users in the US while minimizing costs?

Answer: D. Deploying new Amazon EC2 instances in a Region located in the US.

- **Explanation:** The best way to reduce latency for users is to move the application closer to them. Deploying the application in a **US Region** will serve the US users with low latency and is a standard, cost-effective solution compared to building a physical data center (Option C).

11. An organization has a large number of technical employees who operate their AWS Cloud infrastructure. What does AWS provide to help organize them into teams and then assign the appropriate permissions for each team?

Answer: C. IAM user groups.

- **Explanation: IAM User Groups** allow you to specify permissions for a collection of users. Users inherit the permissions of the group, making it easier to manage access for teams.

12. A company has decided to migrate its Oracle database to AWS. Which AWS service can help achieve this without negatively impacting the functionality of the source database?

Answer: B. AWS Database Migration Service.

- **Explanation: AWS Database Migration Service (DMS)** helps you migrate databases to AWS quickly and securely. The source database remains fully operational during the migration, minimizing downtime.

13. Adjusting compute capacity dynamically to reduce cost is an implementation of which AWS cloud best practice?

Answer: C. Implement elasticity.

- **Explanation: Elasticity** is the ability to acquire resources, like compute capacity, as you need them and release them when you don't, often automatically, to save on costs and meet demand.

14. What are the benefits of having infrastructure hosted in AWS? (Choose TWO)

Answer: A. Increasing speed and agility. and E. All of the physical security and most of the data/network security are taken care of for you.

- **Explanation:** AWS allows for rapid provisioning of resources (**speed and agility**) and handles the **security of the cloud** (physical security, infrastructure). Option B is incorrect (customer is responsible for security *in* the cloud).

15. What is the advantage of the AWS-recommended practice of "decoupling" applications?

Answer: B. Reduces inter-dependencies so that failures do not impact other components of the application.

- **Explanation: Decoupling** breaks an application into smaller, independent components. If one component fails, the others can continue to function, increasing overall fault tolerance and reliability.

16. Which of the following helps a customer view the Amazon EC2 billing activity for the past month?

Answer: D. AWS Cost & Usage Reports.

- **Explanation:** The **AWS Cost & Usage Reports (CUR)** contain the most comprehensive set of cost and usage data available, including hourly resource consumption and billing information for services like EC2. **AWS Cost Explorer** (used to *visualize* the data) is also correct, but CUR is the source for the detailed data. Of the options provided, CUR is the most comprehensive tool for this detail.

17. What do you gain from setting up consolidated billing for five different AWS accounts under another master account?

Answer: C. Each AWS account gets volume discounts.

- **Explanation: Consolidated billing** aggregates usage across all member accounts to qualify for volume pricing discounts and Reserved Instance sharing, which can lead to significant cost savings.

18. What should you do in order to keep the data on EBS volumes safe? (Choose TWO)

Answer: B. Create EBS snapshots. and C. Ensure that EBS data is encrypted at rest.

- **Explanation: EBS Snapshots** are incremental backups stored in S3, which are essential for data backup and recovery. **Encryption at rest** protects the data on the volume itself.

19. One of the most important AWS best-practices to follow is the cloud architecture principle of elasticity. How does this principle improve your architecture's design?

Answer: D. By automatically provisioning the required AWS resources based on changes in demand.

- **Explanation: Elasticity** is the capability to scale computing resources up or down easily to meet fluctuations in demand, often automatically using services like **Auto Scaling**.

20. A startup company is operating on limited funds and is extremely concerned about cost overruns. Which of the below options can be used to notify the company when their monthly AWS bill exceeds \$2000? (Choose TWO)

Answer: A. Setup a CloudWatch billing alarm that triggers an SNS notification when the threshold is exceeded. and C. Configure the AWS Budgets Service to alert the company when the threshold is exceeded.

- **Explanation: AWS Budgets** is the dedicated service for setting custom cost and usage thresholds and sending alerts. **CloudWatch** can also monitor billing metrics and trigger an SNS notification (email or text message) when a threshold is breached.

21. What does Amazon CloudFront use to distribute content to global users with low latency?

Answer: C. AWS Edge Locations.

- **Explanation: Amazon CloudFront** is a Content Delivery Network (CDN) that uses a global network of **Edge Locations** to cache copies of your content closer to your users, reducing latency.

22. What does the "Principle of Least Privilege" refer to?

Answer: A. You should grant your users only the permissions they need when they need them and nothing more.

- **Explanation: The Principle of Least Privilege** is a fundamental security concept that dictates that users, programs, and processes should have only the minimum necessary privileges to perform their jobs.

23. Which of the following does NOT belong to the AWS Cloud Computing models?

Answer: D. Networking as a Service (NaaS).

- **Explanation:** The standard cloud computing models are **Infrastructure as a Service (IaaS)**, **Platform as a Service (PaaS)**, and **Software as a Service (SaaS)**. While AWS offers networking services, "NaaS" is not a formally recognized, distinct service model in the same context.

24. The identification process of an online financial services company requires that new users must complete an online interview with their security team. The completed recorded interviews are only required in the event of a legal issue or a regulatory compliance breach. What is the most cost-effective service to store the recorded videos?

Answer: C. Amazon S3 Glacier Deep Archive.

- **Explanation:** Since the data is rarely accessed (only for legal/compliance issues) and long-term storage is required, **S3 Glacier Deep Archive** is the most cost-effective storage class for data that can be retrieved in hours.

25. Which service provides DNS in the AWS cloud?

Answer: A. Route 53.

- **Explanation: Amazon Route 53** is a highly available and scalable cloud Domain Name System (DNS) web service.

26. Hundreds of thousands of DDoS attacks are recorded every month worldwide. What service does AWS provide to help protect AWS Customers from these attacks? (Choose TWO)

Answer: A. AWS Shield. and D. AWS WAF.

- **Explanation: AWS Shield** is a managed DDoS protection service. **AWS WAF (Web Application Firewall)** protects web applications from common web exploits that could affect application availability, compromise security, or consume excessive resources, including certain types of DDoS attacks.

27. A company is deploying a new two-tier web application in AWS. Where should the most frequently accessed data be stored so that the application's response time is optimal?

Answer: D. Amazon ElastiCache.

- **Explanation: Amazon ElastiCache** is a managed in-memory caching service (like Memcached or Redis) that provides extremely fast (sub-millisecond) response times for frequently accessed data, much faster than a disk-based database or EBS volume.

28. You want to run a questionnaire application for only one day (without interruption), which Amazon EC2 purchase option should you use?

Answer: D. On-demand instances.

- **Explanation: On-Demand Instances** are the best choice when you need compute capacity for a short, uninterrupted workload, as you pay for capacity by the hour or second with no long-term commitment. **Spot Instances** (Option B) can be interrupted.

29. You are working on a project that involves creating thumbnails of millions of images. Consistent uptime is not an issue, and continuous processing is not required. Which EC2 buying option would be the most cost-effective?

Answer: D. Spot Instances.

- **Explanation: Spot Instances** let you bid for unused EC2 capacity, offering the lowest price. Since consistent uptime is not an issue (the job can be stopped and restarted), they are the most cost-effective option for flexible, non-critical, or batch workloads.

30. Which of the following can be described as a global content delivery network (CDN) service?

Answer: D. Amazon CloudFront.

- **Explanation: Amazon CloudFront** is the global CDN service that securely delivers data, videos, applications, and APIs to customers globally with low latency.

31. Which of the following services allows customers to manage their agreements with AWS?

Answer: A. AWS Artifact.

- **Explanation: AWS Artifact** is a resource for on-demand access to AWS security and compliance documents and agreements, such as the Business Associate Addendum (BAA) and non-disclosure agreements.

32. Which of the following are examples of AWS-Managed Services, where AWS is responsible for the operational and maintenance burdens of running the service? (Choose TWO)

Answer: B. Amazon DynamoDB. and D. AWS IAM.

- **Explanation: Amazon DynamoDB** (a NoSQL database) and **AWS IAM** (Identity and Access Management) are **managed services**. AWS handles infrastructure, patching, and availability. With **Amazon EC2** and **Amazon VPC**, the customer manages the operating system, security groups, and most of the configuration (**IaaS**).

33. Your company has a data store application that requires access to a NoSQL database. Which AWS database offering would meet this requirement?

Answer: B. Amazon DynamoDB.

- **Explanation: Amazon DynamoDB** is a fully managed proprietary NoSQL database service. Amazon Aurora and Redshift are relational databases.

34. As part of the Enterprise support plan, who is the primary point of contact for ongoing support needs?

Answer: D. Technical Account Manager (TAM).

- **Explanation: The Technical Account Manager (TAM)** is the primary point of contact for customers with the Enterprise Support plan, providing guidance, architectural review, and ongoing operational support.

35. How can you view the distribution of AWS spending in one of your AWS accounts?

Answer: C. By using AWS Cost Explorer.

- **Explanation: AWS Cost Explorer** is a free tool that allows you to visualize, understand, and manage your AWS costs and usage over time, including viewing the distribution of spending by service.

36. Which of the following must an IAM user provide to interact with AWS services using the AWS Command Line Interface (AWS CLI)?

Answer: A. Access keys.

- **Explanation:** The **AWS CLI** uses a pair of **Access Keys** (an Access Key ID and a Secret Access Key) to authenticate and authorize a user's request. A username and password are used for the Management Console.

37. You have AWS Basic support, and you have discovered that some AWS resources are being used maliciously, and those resources could potentially compromise your data. What should you do?

Answer: B. Contact the AWS Abuse team.

- **Explanation:** The **AWS Abuse team** handles reports of malicious activity originating from AWS resources, such as spam, port scanning, and security breaches, regardless of your support plan.

38. Select TWO examples of the AWS shared controls.

Answer: A. Patch Management. and D. Configuration Management.

- **Explanation: Shared controls** are those where both the customer and AWS have a responsibility. For Patch Management (OS patches on EC2 are customer's, infrastructure patches are AWS's) and Configuration Management (customer configures guest OS/security groups, AWS configures infrastructure), the responsibility is shared. Data Center operations (E) are AWS's responsibility.

39. In order to implement best practices when dealing with a "Single Point of Failure," you should attempt to build as much automation as possible in both detecting and reacting to failure. Which of the following AWS services would help? (Choose TWO)

Answer: A. ELB. and B. Auto Scaling.

- **Explanation: Elastic Load Balancing (ELB)** distributes traffic to healthy resources, detecting and bypassing failed components. **Auto Scaling** automatically adjusts the number of compute resources to maintain performance and availability, replacing failed instances.

40. A company is planning to host an educational website on AWS. Their video courses will be streamed all around the world. Which of the following AWS services will help achieve high transfer speeds?

Answer: D. Amazon CloudFront.

- **Explanation:** **Amazon CloudFront** is the global Content Delivery Network (CDN) that caches content at Edge Locations worldwide, providing the lowest latency and highest transfer speeds for streaming media and other data to a global audience.

41. A developer is planning to build a two-tier web application that has a MySQL database layer. Which of the following AWS database services would provide automated backups for the application?

Answer: B. Amazon Aurora.

- **Explanation:** **Amazon Aurora** (a fully managed relational database service compatible with MySQL) automatically performs continuous backups to Amazon S3. A database on an EC2 instance (A) requires manual setup of backups. DynamoDB (C) and Neptune (D) are not MySQL-compatible relational databases.

42. What is the AWS service that enables AWS architects to manage infrastructure as code?

Answer: A. AWS CloudFormation.

- **Explanation:** **AWS CloudFormation** allows you to provision your AWS infrastructure in a declarative way using code (templates), a key component of the Infrastructure as Code (IaC) practice.

43. Under the shared responsibility model, which of the following is the responsibility of AWS?

Answer: B. Configuring infrastructure devices.

- **Explanation:** AWS is responsible for the **security of the cloud**, which includes maintaining and configuring the underlying infrastructure, including physical devices, network infrastructure, and foundational services. Client-side encryption, server-side encryption, and security groups are the customer's responsibility (**security in the cloud**).

44. What does the AWS Health Dashboard provide? (Choose TWO)

Answer: A. Detailed troubleshooting guidance to address AWS events impacting your resources. and E. Personalized view of AWS service health.

- **Explanation:** The **AWS Health Dashboard** provides personalized information about the health of AWS services, showing service disruptions and offering detailed steps and guidance to address issues impacting your specific resources.

45. You have deployed your application on multiple Amazon EC2 instances. Your customers complain that sometimes they can't reach your application. Which AWS service allows you to monitor the performance of your EC2 instances to assist in troubleshooting these issues?

Answer: C. Amazon CloudWatch.

- **Explanation:** **Amazon CloudWatch** is the monitoring and observability service that provides data and actionable insights to monitor your applications, respond to system-wide performance changes, and troubleshoot resource utilization, including EC2 instances.

46. Your company is developing a critical web application in AWS, and the security of the application is a top priority. Which of the following AWS services will provide infrastructure security optimization recommendations?

Answer: D. AWS Trusted Advisor.

- **Explanation:** **AWS Trusted Advisor** is a service that inspects your AWS environment and makes recommendations based on best practices in five categories: cost optimization, performance, security, fault tolerance, and service limits.

47. Which of the following is not a benefit of Amazon S3? (Choose TWO)

Answer: B. Amazon S3 can run any type of application or backend system. and D. Amazon S3 can be scaled manually to store and retrieve any amount of data from anywhere.

- **Explanation:** S3 is an object storage service, not a compute service, so it cannot run applications (B). S3 scales **automatically** (D) and does not require manual scaling. Options A, C, and E are true benefits.

48. In the AWS Shared responsibility Model, which of the following are the responsibility of the customer? (Choose TWO)

Answer: D. Setting password complexity rules. and E. Configuring network access rules.

- **Explanation:** The customer is responsible for **security in the cloud**. This includes identity and access management (like password rules) and network controls (like configuring Security Groups and NACLs). Disk disposal and physical access are AWS's responsibility.

49. What does AWS provide to deploy popular technologies such as IBM MQ on AWS with the least amount of effort and time?

Answer: C. AWS Quick Start reference deployments.

- **Explanation: AWS Quick Starts** are automated reference deployments built by AWS solutions architects and partners to deploy popular technologies on AWS using AWS CloudFormation templates in a best-practices manner.

50. An organization has decided to purchase an Amazon EC2 Reserved Instance (RI) for three years in order to reduce costs. It is possible that the application workloads could change during the reservation period. What is the EC2 Reserved Instance (RI) type that will allow the company to exchange the purchased reserved instance for another reserved instance with higher computing power if they need to?

Answer: D. Convertible RI.

- **Explanation: Convertible Reserved Instances** offer a discount (less than Standard RIs) but provide the flexibility to change the instance family, operating system, and tenancy over the commitment term. **Standard Reserved Instances (C)** cannot be exchanged for other types.

Practice Exam 2 with Explanations

A global company with a large number of AWS accounts is seeking a way in which they can centrally manage billing and security policies across all accounts. Which AWS Service will assist them in meeting these goals? A. AWS Organizations. B. AWS Trusted Advisor. C. IAM User Groups. D. AWS Config. Answer: A

- **Explanation: AWS Organizations** allows you to centrally manage and govern multiple AWS accounts. Its key features include **consolidated billing** for all accounts and the ability to apply policies (Service Control Policies or SCPs) across all or groups of accounts for central **security policy** management.

Which service provides object-level storage in AWS? A. Amazon EBS. B. Amazon Instance Store. C. Amazon EFS. D. **Amazon S3**. Answer: D

- **Explanation: Amazon S3 (Simple Storage Service)** is a highly durable and scalable service that provides **object storage**. Data is stored as objects within buckets. EBS, Instance Store, and EFS are block and file storage services, respectively.

A company is concerned that they are spending money on underutilized compute resources in AWS. Which AWS feature will help ensure that their applications are automatically adding/removing EC2 compute capacity to closely match the required demand? A. AWS Elastic Load Balancer. B. AWS Budgets. C. **AWS Auto Scaling**. D. AWS Cost Explorer. Answer: C

- **Explanation: AWS Auto Scaling** is the service designed to automatically adjust the number of EC2 instances in an Auto Scaling group to meet demand. It adds capacity when needed to handle increased load and removes underutilized capacity (scaling-in) to **reduce costs**.

Which S3 storage class is best for data with unpredictable access patterns? A. **Amazon S3 Intelligent-Tiering**. B. Amazon S3 Glacier Flexible Retrieval. C. Amazon S3 Standard. D. Amazon S3 Standard-Infrequent Access. Answer: A

- **Explanation: Amazon S3 Intelligent-Tiering** is explicitly designed for data with **unpredictable access patterns**. It automatically moves objects between two access tiers (frequent and infrequent) based on access patterns, without performance impact or operational overhead, which helps optimize storage costs.

What is the AWS database service that allows you to upload data structured in key-value format? A. **Amazon DynamoDB**. B. Amazon Aurora. C. Amazon Redshift. D. Amazon RDS. Answer: A

- **Explanation: Amazon DynamoDB** is a fast, flexible **NoSQL** database service for single-digit millisecond performance at any scale. It supports document and **key-value** store models. Aurora, Redshift, and RDS are relational databases (SQL).

Which of the following is NOT correct regarding Amazon EC2 On-demand instances? A. You have to pay a start-up fee when launching a new instance for the first time. B. The on-demand instances follow the AWS pay-as-you-go pricing model. C. With on-demand instances, no longer-term commitments or upfront payments are needed. D. When using on-demand Linux instances, you are charged per second based on an hourly rate. Answer: A

- **Explanation:** The statement "You have to pay a start-up fee when launching a new instance for the first time" is **incorrect**. **On-Demand instances** have no upfront costs or minimum commitments; you pay for compute capacity by the second (for Linux) or hour (for Windows), with no start-up fees.

A company has moved to AWS recently. Which of the following AWS Services will help ensure that they have the proper security settings? (Choose TWO) A. AWS Trusted Advisor. B. Amazon Inspector. C. Amazon SNS. D. Amazon CloudWatch. E. Concierge Support Team. Answer: A, B

- **Explanation:** **AWS Trusted Advisor** analyzes your environment against AWS best practices, including checking for common **security settings** misconfigurations (e.g., open security groups). **Amazon Inspector** is an automated security assessment service that helps improve the **security and compliance** of applications deployed on AWS by checking for vulnerabilities.

What is the AWS feature that provides an additional level of security above the default authentication mechanism of usernames and passwords? A. Encrypted keys. B. Email verification. C. AWS KMS. D. **AWS MFA**. Answer: D

- **Explanation:** **AWS MFA (Multi-Factor Authentication)** adds a second factor to the login process, requiring both a password (something you know) and a code from an MFA device (something you have). This provides an **additional level of security**.

A company is introducing a new product to their customers, and is expecting a surge in traffic to their web application. As part of their Enterprise Support plan, which of the following provides the company with architectural and scaling guidance? A. AWS Knowledge Center. B. AWS Health Dashboard. C. **Infrastructure Event Management**. D. AWS Support Concierge Service. Answer: C

- **Explanation:** **Infrastructure Event Management** is a structured program (included with Enterprise Support, and available for a fee with Developer/Business Support) that provides **architectural and scaling guidance** for preparing for and deploying major events, such as product launches or migrations, that could lead to a **surge in traffic**.

You work as an on-premises MySQL DBA. The work of database configuration, backups, patching, and DR can be time-consuming and repetitive. Your company has decided to migrate to the AWS Cloud. Which of the following can help save time on database maintenance so you can focus on data architecture and performance? A. **Amazon RDS**. B. Amazon Redshift. C. Amazon DynamoDB. D. Amazon CloudWatch. Answer: A

- **Explanation:** **Amazon RDS (Relational Database Service)** is a managed service that handles the administrative tasks of database management, such as hardware provisioning, setup, patching, and automated backups, freeing up the DBA to focus on application-specific tasks like data architecture and performance.

Which of the below is a best-practice when designing solutions on AWS? A. Invest heavily in architecting your environment, as it is not easy to change your design later. B. Use AWS reservations to reduce costs when testing your production environment. C. **Automate wherever possible to make architectural experimentation easier**. D. Provision a large compute capacity to handle any spikes in load Answer: C

- **Explanation:** A core principle of the AWS Well-Architected Framework is **automation**. By automating infrastructure provisioning and deployment, you make it easier to **experiment** with new architectures, test changes, and recover from failures, which is a major advantage of the cloud.

According to the AWS Acceptable Use Policy, which of the following statements is true regarding penetration testing of EC2 instances? A. Penetration testing is not allowed in AWS. B. Penetration testing is performed automatically by AWS to determine vulnerabilities in your AWS infrastructure. C. **Penetration testing can be performed by the customer on their own instances without prior authorization from AWS**. D. The AWS customers are only allowed to perform penetration testing on services managed by AWS. Answer: C

- **Explanation:** For most AWS services, including your own EC2 instances, AWS **allows customers to perform penetration testing** without prior authorization, provided they follow the rules in the AWS Customer Support Policy for Penetration Testing.

Which service is used to ensure that messages between software components are not lost if one or more components fail? A. **Amazon SQS**. B. Amazon SES. C. AWS Direct Connect. D. Amazon Connect. Answer: A

- **Explanation:** **Amazon SQS (Simple Queue Service)** is a fully managed message queuing service. It acts as a buffer between components, storing messages redundantly

until they are successfully processed and deleted by the consumer. This ensures that **messages are not lost** even if a component fails temporarily.

The principle “design for failure and nothing will fail” is very important when designing your AWS Cloud architecture. Which of the following would help adhere to this principle? (Choose TWO) A. Multi-factor authentication. B. **Availability Zones**. C. **Elastic Load Balancing**. D. Penetration testing. E. Vertical Scaling. Answer: B, C

- **Explanation:** To **design for failure**, you must distribute your resources. Using multiple **Availability Zones (AZs)** protects against physical infrastructure failure in a single datacenter. **Elastic Load Balancing (ELB)** distributes traffic across resources (like EC2 instances) in multiple AZs, ensuring if one instance or AZ fails, traffic is routed to the healthy ones, thus maintaining high availability.

What is the AWS service that provides a virtual network dedicated to your AWS account? A. AWS VPN. B. AWS Subnets. C. AWS Dedicated Hosts. D. **Amazon VPC**. Answer: D

- **Explanation:** **Amazon VPC (Virtual Private Cloud)** is the service that lets you provision a logically **isolated section of the AWS Cloud** where you can launch AWS resources in a virtual network that you define. It is the fundamental networking layer in AWS.

According to the AWS Shared responsibility model, which of the following are the responsibility of the customer? (Choose TWO) A. Managing environmental events of AWS data centers. B. **Protecting the confidentiality of data in transit in Amazon S3**. C. Controlling physical access to AWS Regions. D. Ensuring that the underlying EC2 host is configured properly. E. **Patching applications installed on Amazon EC2**. Answer: B, E

- **Explanation:** Under the Shared Responsibility Model, AWS is responsible for security of the cloud (hardware, infrastructure, regions/AZs). The **customer** is responsible for security *in* the cloud. This includes protecting their **data** (encryption) and managing their deployed **applications**, including patching and configuration.

Which of the following AWS services can be used as a compute resource? (Choose TWO) A. Amazon VPC. B. Amazon CloudWatch. C. Amazon S3. D. **Amazon EC2**. E. **AWS Lambda**. Answer: D, E

- **Explanation:** **Compute resources** are services that run code. **Amazon EC2** provides virtual servers for running code. **AWS Lambda** is a serverless compute service that runs

code in response to events. VPC is networking, CloudWatch is monitoring, and S3 is storage.

Your company is designing a new application that will store and retrieve photos and videos. Which of the following services should you recommend as the underlying storage mechanism? A. Amazon EBS. B. Amazon SQS. C. **Amazon S3**. D. Amazon Instance store. Answer: C

- **Explanation: Amazon S3 (Simple Storage Service)** is the ideal service for storing **unstructured data** like photos and videos due to its massive scalability, high durability, and easy web-based access.

Which of the following is equivalent to a user name and password and is used to authenticate your programmatic access to AWS services and APIs? A. Instance Password. B. Key pairs. C. **Access Keys**. D. MFA. Answer: C

- **Explanation: Access Keys** consist of an Access Key ID and a Secret Access Key. They are the **programmatic credential** used by the AWS CLI, SDKs, and APIs to securely authenticate calls to AWS services, similar to how a username and password authenticate a console login.

What does Amazon ElastiCache provide? A. **In-memory caching for read-heavy applications**. B. An Elcache compatible in-memory data store. C. An online software store that allows Customers to launch pre-configured software with just few clicks. D. A domain name system in the cloud. Answer: A

- **Explanation: Amazon ElastiCache** is a managed service for deploying, operating, and scaling popular **in-memory data stores** (Redis and Memcached). It's primarily used to speed up performance for **read-heavy applications** by offloading the database and serving common queries from the cache.

What is the AWS service that enables you to manage all of your AWS accounts from a single master account? A. AWS WAF. B. AWS Trusted Advisor. C. **AWS Organizations**. D. Amazon Config. Answer: Answer C

- **Explanation: AWS Organizations** is the central management service for multiple AWS accounts, enabling a single master account to manage billing, security, and access control across all member accounts.

Which of the following EC2 instance purchasing options supports the Bring Your Own License (BYOL) model for almost every BYOL scenario? A. Dedicated Instances. B. **Dedicated Hosts**. C. On-demand Instances. D. Reserved Instances. Answer: B

- **Explanation:** **Dedicated Hosts** are physical EC2 servers dedicated for your use. Since you have control over the **physical server**, this is the only option that supports most licensing scenarios where you need to comply with licensing requirements that restrict the software to a specific physical server (e.g., core, socket, or VM count).

Which of the following is one of the benefits of moving infrastructure from an on-premises data center to AWS? A. Free support for all enterprise customers. B. Automatic data protection. C. **Reduced Capital Expenditure (CapEx)**. D. AWS holds responsibility for managing customer applications. Answer: C

- **Explanation:** Moving to AWS shifts the cost model from **Capital Expenditure (CapEx)**—buying physical servers upfront—to **Operational Expenditure (OpEx)**—paying for services as you consume them. This **reduces CapEx**.

Which of the following are important design principles you should adopt when designing systems on AWS? (Choose TWO) A. Always use Global Services in your architecture rather than Regional Services. B. Always choose to pay as you go. C. Treat servers as fixed resources. D. **Automate wherever possible**. E. **Remove single points of failure**. Answer: D, E

- **Explanation:** The two principles that directly align with the AWS Well-Architected Framework are **Automate wherever possible** (Operational Excellence) and **Remove single points of failure** (Reliability). Automating leads to efficiency, and removing SPOFs increases fault tolerance.

Which AWS Service can be used to establish a dedicated, private network connection between AWS and your datacenter? A. **AWS Direct Connect**. B. Amazon CloudFront. C. AWS Snowball. D. Amazon Route 53. Answer: A

- **Explanation:** **AWS Direct Connect** is a networking service that provides an alternative to using the public internet by establishing a dedicated, high-bandwidth, **private network connection** from your on-premises data center to AWS.

You are working on two projects that require completely different network configurations. Which AWS service or feature will allow you to isolate resources and

network configurations? A. Internet gateways. B. **Virtual Private Cloud**. C. Security Groups. D. Amazon CloudFront. Answer: B

- **Explanation: Virtual Private Cloud (VPC)** provides a logically isolated section of the AWS Cloud. By creating separate VPCs for each project, you can have **completely isolated networks** with different IP ranges, subnets, and routing configurations.

Which of the following services can help protect your web applications from SQL injection and other vulnerabilities in your application code? A. Amazon Cognito. B. AWS IAM. C. Amazon Aurora. D. **AWS WAF**. Answer: D

- **Explanation: AWS WAF (Web Application Firewall)** helps protect web applications from common web exploits like **SQL injection** and cross-site scripting (XSS) by allowing you to create rules that block common attack patterns.

An organization needs to analyze and process a large number of data sets. Which AWS service should they use? A. **Amazon EMR**. B. Amazon MQ. C. Amazon SNS. D. Amazon SQS. Answer: A

- **Explanation: Amazon EMR (Elastic MapReduce)** is a managed cluster platform that simplifies running big data frameworks like Apache Hadoop and Spark to **process and analyze vast amounts of data sets** efficiently.

Based on the AWS Shared Responsibility Model, which of the following are the sole responsibility of AWS? (Choose TWO) A. Monitoring network performance. B. Installing software on EC2 instances. C. **Creating hypervisors**. D. Configuring Access Control Lists (ACLs). E. **Hardware maintenance**. Answer: C, E

- **Explanation:** AWS is responsible for the security of the cloud, which includes the underlying infrastructure. This means **creating the hypervisors** (virtualization layer) and **hardware maintenance** (physical infrastructure) are the **sole responsibilities of AWS**.

What is the AWS service that provides you the highest level of control over the underlying virtual infrastructure? A. Amazon Redshift. B. Amazon DynamoDB. C. **Amazon EC2**. D. Amazon RDS. Answer: C

- **Explanation: Amazon EC2 (Elastic Compute Cloud)** provides the most control, as you are responsible for the operating system, its patching, application configuration, and security settings. Managed services like RDS, Redshift, and DynamoDB abstract away much of the underlying virtual infrastructure management.

What are the default security credentials that are required to access the AWS management console for an IAM user account? A. MFA. B. Security tokens. C. **A user name and password.** D. Access keys. Answer: C

- **Explanation:** The **default** method for an IAM user to sign in to the AWS Management Console is by providing their **user name and password**. MFA is optional but recommended, and Access Keys are for programmatic access.

In your on-premises environment, you can create as many virtual servers as you need from a single template. What can you use to perform the same in AWS? A. IAM. B. An internet gateway. C. EBS Snapshot. D. **AMI.** Answer: D

- **Explanation:** An **AMI (Amazon Machine Image)** serves as a **template** for the root volume of an EC2 instance. It includes the operating system, application server, and applications, allowing you to launch as many identical virtual servers (EC2 instances) as needed.

What are two advantages of using Cloud Computing over using traditional data centers? (Choose TWO) A. Reserved Compute capacity. B. **Eliminating Single Points of Failure (SPOFs).** C. **Distributed infrastructure.** D. Virtualized compute resources. E. Dedicated hosting. Answer: B, C

- **Explanation:** Cloud computing, by its nature, offers highly **distributed infrastructure** across Regions and Availability Zones, which inherently helps in **eliminating Single Points of Failure (SPOFs)**, a major advantage over a single on-premises data center.

Which of the following aspects of security are managed by AWS? (Choose TWO) A. Encryption of EBS volumes. B. VPC security. C. Access permissions. D. **Hardware patching.** E. **Securing global physical infrastructure.** Answer: D, E

- **Explanation:** Under the Shared Responsibility Model, AWS manages the security *of* the cloud. This includes maintaining the physical facilities (**securing global physical infrastructure**) and managing the underlying host operating systems (**hardware patching**). The other options (A, B, C) are customer responsibilities for security *in* the cloud.

Which statement best describes the operational excellence pillar of the AWS Well-Architected Framework? A. The ability of a system to recover gracefully from failure. B. The

efficient use of computing resources to meet requirements. C. **The ability to monitor systems and improve supporting processes and procedures.** D. The ability to manage datacenter operations more efficiently. Answer: C

- **Explanation:** The **Operational Excellence** pillar focuses on running and monitoring systems, and continually improving supporting processes and procedures. This includes things like managing change, responding to events, and defining standards for daily operations.

AWS has created a large number of Edge Locations as part of its Global Infrastructure. Which of the following is NOT a benefit of using Edge Locations? A. Edge locations are used by CloudFront to cache the most recent responses. B. Edge locations are used by CloudFront to improve your end users' experience when uploading files. C. **Edge locations are used by CloudFront to distribute traffic across multiple instances to reduce latency.** D. Edge locations are used by CloudFront to distribute content to global users with low latency. Answer: C

- **Explanation:** Edge Locations are used for **caching content (A) and accelerating uploads (B and D)** via services like CloudFront and S3 Transfer Acceleration. They are **NOT** used by CloudFront to distribute traffic across multiple instances; that's the job of an **Elastic Load Balancer (ELB)** within an AWS Region.

What are the change management tools that helps AWS customers audit and monitor all resource changes in their AWS environment? (Choose TWO) A. **AWS CloudTrail.** B. Amazon Comprehend. C. AWS Transit Gateway. D. AWS X-Ray. E. **AWS Config.** Answer: A, E

- **Explanation:** **AWS CloudTrail** logs all API calls and console actions, providing a historical record of all **resource changes** (who did what, when). **AWS Config** continuously monitors and records your resource configurations, allowing you to assess, audit, and evaluate the configurations of your AWS resources over time, which is essential for **change management**.

Which of the following services allows you to run containerized applications on a cluster of EC2 instances? A. **Amazon ECS.** B. AWS Data Pipeline. C. AWS Cloud9. D. AWS Personal Health Dashboard. Answer: A

- **Explanation:** **Amazon ECS (Elastic Container Service)** is a fully managed container orchestration service that allows you to easily deploy, manage, and scale **containerized applications** by running them on a **cluster of EC2 instances** (or with AWS Fargate, which removes the need to manage the EC2 cluster).

Which of the following services will help businesses ensure compliance in AWS? A. CloudFront. B. CloudEndure Migration. C. CloudWatch. D. **CloudTrail**. Answer: D

- **Explanation:** **AWS CloudTrail** records API calls and actions, providing an audit trail. This log of activities is crucial for demonstrating regulatory **compliance** by showing exactly who performed what action on which resource.

Which of the following procedures will help reduce your Amazon S3 costs? A. Use the Import/Export feature to move old files automatically to Amazon Glacier. B. **Use the right combination of storage classes based on different use cases**. C. Pick the right Availability Zone for your S3 bucket. D. Move all the data stored in S3 standard to EBS. Answer: B

- **Explanation:** S3 offers various storage classes (Standard, Infrequent Access, Glacier, etc.) with different price points. By using **lifecycle policies** to transition data to cheaper storage classes based on its access frequency (e.g., to S3 Standard-IA or Glacier for infrequently accessed data), you can significantly **reduce S3 costs**.

What are the AWS services/features that can help you maintain a highly available and fault-tolerant architecture in AWS? (Choose TWO) A. AWS Direct Connect. B. **Amazon EC2 Auto Scaling**. C. **Elastic Load Balancer**. D. CloudFormation. E. Network ACLs. Answer: B, C

- **Explanation:** **Elastic Load Balancer (ELB)** distributes traffic to healthy targets, ensuring a failure in one instance doesn't stop service. **Amazon EC2 Auto Scaling** automatically replaces unhealthy instances and ensures a minimum number of instances are running, which are key components for **highly available and fault-tolerant** design.

Which of the following activities may help reduce your AWS monthly costs? A. **Enabling Amazon EC2 Auto Scaling for all of your workloads**. B. Using the AWS Network Load Balancer (NLB) to load balance the incoming HTTP requests. C. Removing all of your Cost Allocation Tags. D. Deploying your AWS resources across multiple Availability Zones. Answer: A

- **Explanation:** **Enabling Amazon EC2 Auto Scaling** can **reduce costs** by automatically terminating (scaling in) EC2 instances during periods of low demand, ensuring you only pay for the capacity you actually need.

What is the AWS service/feature that takes advantage of Amazon CloudFront's globally distributed edge locations to transfer files to S3 with higher upload speeds? A. **S3 Transfer Acceleration**. B. AWS WAF. C. AWS Snowmobile. D. AWS Snowball. Answer: A

- **Explanation: S3 Transfer Acceleration** uses the CloudFront network's edge locations to route data over an optimized network path to S3, resulting in **significantly faster, long-distance file transfers (uploads)**.

Which of the following AWS security features is associated with an EC2 instance and functions to filter incoming traffic requests? A. AWS X-Ray. B. Network ACL. C. **Security Groups**. D. VPC Flow logs. Answer: C

- **Explanation: A Security Group** acts as a virtual firewall for an EC2 instance to control both incoming (inbound) and outgoing (outbound) traffic. It operates at the instance level and is the primary way to **filter traffic requests** to an instance.

Which AWS services can be used to improve the performance of a global application and reduce latency for its users? (Choose TWO) A. AWS KMS. B. **AWS Global accelerator**. C. AWS Direct Connect. D. AWS Glue. E. **Amazon CloudFront**. Answer: B, E

- **Explanation: Amazon CloudFront** is a Content Delivery Network (CDN) that caches content at edge locations globally, reducing latency. **AWS Global Accelerator** uses the AWS global network infrastructure to route user traffic to the nearest healthy endpoint, improving availability and **performance** for a **global application**.

Using Amazon RDS falls under the shared responsibility model. Which of the following are customer responsibilities? (Choose TWO) A. **Building the relational database schema**. B. Performing backups. C. **Managing the database settings**. D. Patching the database software. E. Installing the database software. Answer: A, C

- **Explanation: AWS** manages the patching/installation of the underlying OS and database software (D, E) and performs automated backups (B). The **customer** is responsible for everything *in* the database, which includes designing and **building the database schema (A)** and configuring database-level access and performance **settings (C)**.

A company has a large amount of structured data stored in their on-premises data center. They are planning to migrate all the data to AWS, what is the most appropriate AWS database option? A. Amazon DynamoDB. B. Amazon SNS. C. **Amazon RDS**. D. Amazon ElastiCache. Answer: C

- **Explanation: Structured data** that is typically stored in an on-premises data center is best migrated to a **Relational Database Service (RDS)**, which supports familiar engines

like MySQL, PostgreSQL, or SQL Server. DynamoDB is NoSQL, SNS is messaging, and ElastiCache is for caching.

A company has created a solution that helps AWS customers improve their architectures on AWS. Which AWS program may support this company? A. **APN Consulting Partners.** B. AWS TAM. C. APN Technology Partners. D. AWS Professional Services. Answer: A

- **Explanation:** **APN (AWS Partner Network) Consulting Partners** are professional services firms that help customers design, architect, build, migrate, and **manage their workloads and applications on AWS**. Technology Partners provide software solutions.

What is the AWS serverless service that allows you to run your applications without any administrative burden? A. Amazon LightSail. B. **AWS Lambda.** C. Amazon RDS instances. D. Amazon EC2 instances. Answer: B

- **Explanation:** **AWS Lambda** is the premier **serverless** compute service. With Lambda, you upload your code, and AWS handles all the underlying infrastructure, including provisioning, scaling, patching, and OS management, eliminating the **administrative burden** of managing servers.

Jessica is managing an e-commerce web application in AWS. The application is hosted on six EC2 instances. One day, three of the instances crashed; but none of her customers were affected. What has Jessica done correctly in this scenario? A. She has properly built an elastic system. B. **She has properly built a fault tolerant system.** C. She has properly built an encrypted system. D. She has properly built a scalable system. Answer: B

- **Explanation:** A **fault tolerant system** is one that can continue operating without interruption or loss of data when one or more of its components fail. Since three instances crashed but **none of the customers were affected**, the application was able to tolerate the fault, which is the definition of **fault tolerance**.

Practice Exam 3: Answers and Explanations

1. Where can you store files in AWS? (Choose TWO)

Answer: A. Amazon EFS. and C. Amazon EBS.

- **Explanation:**
 - **Amazon Elastic File System (EFS)** is a scalable, elastic, cloud-native **file storage** service for use with AWS Cloud services and on-premises resources.
 - **Amazon Elastic Block Store (EBS)** provides persistent block storage volumes for use with EC2 instances. When formatted with a file system, it stores files.
 - SNS, ECS, and EMR are non-storage services (messaging, container orchestration, big data processing).

2. Which AWS service can be used to store and reliably deliver messages across distributed systems?

Answer: A. Amazon Simple Queue Service.

- **Explanation:** **Amazon Simple Queue Service (SQS)** is a fully managed message queuing service that enables you to decouple and scale microservices, distributed systems, and serverless applications.

3. Which of the following describes the payment model that AWS makes available for customers that can commit to using Amazon EC2 over a one or 3-year term to reduce their total computing costs?

Answer: D. Save when you reserve.

- **Explanation:** This refers to **Reserved Instances (RIs)**, which provide a significant discount (the "save when you reserve" model) compared to On-Demand pricing in exchange for committing to a 1-year or 3-year term.

4. A company is migrating its on-premises database to Amazon RDS. What should the company do to ensure Amazon RDS costs are kept to a minimum?

Answer: A. Right-size before and after migration.

- **Explanation:** **Right-sizing** ensures that you select the smallest, most cost-effective instance type that can still meet your application's performance and capacity needs. This is the fundamental step in cost reduction. Options B, C, and D are either related to availability/resilience or are more complex purchasing models applied after right-sizing.

5. What is the primary storage service used by Amazon RDS database instances?

Answer: B. Amazon EBS.

- **Explanation:** **Amazon Relational Database Service (RDS)** uses **Amazon Elastic Block Store (EBS)** volumes for the underlying database and log storage.

6. A company is developing a new application using a microservices framework. The new application is having performance and latency issues. Which AWS Service should be used to troubleshoot these issues?

Answer: B. AWS X-Ray.

- **Explanation:** **AWS X-Ray** is a debugging and tracing service that collects data about requests that your application serves, providing a visual map of the application's components and helping you identify performance bottlenecks and latency issues within a microservices architecture.

7. Which of the following AWS services is designed with native Multi-AZ fault tolerance in mind? (Choose TWO)

Answer: C. Amazon Simple Storage Service. and E. Amazon DynamoDB.

- **Explanation:**
 - **Amazon Simple Storage Service (S3)** and **Amazon DynamoDB** are designed to store data redundantly across multiple Availability Zones (AZs) by default, offering native Multi-AZ fault tolerance.
 - Redshift is a data warehouse that can be deployed in a single AZ, and EBS volumes are AZ-specific.

8. What are the Amazon RDS features that can be used to improve the availability of your database? (Choose TWO)

Answer: B. Multi-AZ Deployment. and C. Automatic patching.

- **Explanation:**
 - **Multi-AZ Deployment** automatically creates a standby replica in a different AZ for failover, greatly increasing availability.
 - **Automatic patching** (done during maintenance windows) ensures the underlying database software is up-to-date and secure, which improves reliability and thus availability.
 - Read Replicas (D) improve performance and aid in disaster recovery, but Multi-AZ is the primary feature for immediate high availability failover.

9. Sarah has deployed an application in the Northern California (us-west-1) region. After examining the application's traffic, she notices that about 30% of the traffic is coming from Asia. What can she do to reduce latency for the users in Asia?

Answer: D. Create a CDN using CloudFront, so that content is cached at Edge Locations close to and in Asia.

- **Explanation:** To reduce latency for global users, you must serve content closer to them. **Amazon CloudFront** is a Content Delivery Network (CDN) that uses Edge Locations worldwide to cache content, dramatically reducing latency for users far from the origin region.

10. An organization runs many systems and uses many AWS products. Which of the following services enables them to control how each developer interacts with these products?

Answer: A. AWS Identity and Access Management.

- **Explanation: AWS Identity and Access Management (IAM)** is the service that lets you securely control access to AWS services and resources for your users. You use IAM policies to define permissions for each developer.

11. Using Amazon EC2 falls under which of the following cloud computing models?

Answer: B. IaaS.

- **Explanation: Amazon EC2 (Elastic Compute Cloud)** provides virtual machines, which is the foundational building block of **Infrastructure as a Service (IaaS)**. The customer manages the operating system, applications, and data.

12. Which of the below is a best-practice when building applications on AWS?

Answer: D. Decouple the components of the application so that they run independently.

- **Explanation: Decoupling** application components (e.g., using SQS or SNS) is a fundamental architectural best practice. It increases fault tolerance, as the failure of one component will not directly cause the failure of the entire application.

13. Your company is designing a new application that will store and retrieve photos and videos. Which of the following services should you recommend as the underlying storage mechanism?

Answer: D. Amazon S3.

- **Explanation: Amazon Simple Storage Service (S3)** is an object storage service built to store and retrieve any amount of data from anywhere. It is the ideal, highly durable, and scalable service for storing large amounts of unstructured data like photos and videos.

14. Amazon Glacier is an Amazon S3 storage class that is suitable for storing [...] & [...]. (Choose TWO)

Answer: A. Active archives. and C. Long-term analytic data.

- **Explanation: Amazon S3 Glacier** is optimized for data archiving, which includes **active archives** (data that needs to be preserved but is infrequently accessed) and **long-term analytic data** that can tolerate retrieval times of minutes to hours. It is not suitable for dynamic or active data.

15. What does Amazon Elastic Beanstalk provide?

Answer: A. A PaaS solution to automate application deployment.

- **Explanation: Amazon Elastic Beanstalk** is an easy-to-use service for deploying and scaling web applications and services. It handles capacity provisioning, load balancing, auto-scaling, and application health monitoring, making it a **Platform as a Service (PaaS)** offering.

16. What is the AWS service that performs automated network assessments of Amazon EC2 instances to check for vulnerabilities?

Answer: C. Amazon Inspector.

- **Explanation: Amazon Inspector** is an automated security assessment service that helps improve the security and compliance of applications deployed on AWS by checking for unintended network accessibility and vulnerabilities on EC2 instances.

17. Under the Shared Responsibility Model, which of the following controls do customers fully inherit from AWS? (Choose TWO)

Answer: D. Environmental controls. and E. Physical controls.

- **Explanation:** These fall under the **Security of the Cloud**, which is **AWS's responsibility**. AWS manages the physical security of data centers, environmental factors (cooling, power), and access to hardware. The customer is responsible for the other controls (security *in* the cloud).

18. A company needs to host a database in Amazon RDS for at least three years. Which of the following options would be the most cost-effective solution?

Answer: B. Reserved instances - Partial Upfront.

- **Explanation: Reserved Instances (RIs)** offer the largest discounts for long-term commitment. A **Partial Upfront** RI is more cost-effective than No Upfront (A), and is the

recommended model when you can afford a small initial payment. On-Demand (C) is much more expensive.

19. Your application has recently experienced significant global growth, and international users are complaining of high latency. What is the AWS characteristic that can help improve your international users' experience?

Answer: B. Global reach.

- **Explanation:** The **Global Reach** of AWS, consisting of Regions and Edge Locations worldwide, allows a company to deploy resources and cache content closer to international users, thereby reducing latency and improving their experience.

20. Savings Plans are available for which of the following AWS compute services? (Choose TWO)

Answer: D. Amazon EC2. and E. AWS Lambda.

- **Explanation: Savings Plans** are a flexible pricing model that offers lower prices in exchange for a commitment to a consistent amount of compute usage (measured in \$/hour) for a 1- or 3-year term. They cover **Amazon EC2** and **AWS Lambda** (and AWS Fargate).

21. A company has business critical workloads hosted on AWS and they are unwilling to accept any downtime. Which of the following is a recommended best practice to protect their workloads in the event of an unexpected natural disaster?

Answer: D. Deploy AWS resources to another AWS Region and implement an Active-Active disaster recovery strategy.

- **Explanation:** Natural disasters can affect an entire Region. To protect against this, you must deploy resources across multiple, geographically isolated **Regions**. An Active-Active strategy offers the lowest recovery time objective (RTO), effectively zero downtime.

22. Which statement is correct with regards to AWS service limits? (Choose TWO)

Answer: A. You can contact AWS support to increase the service limits. and D. You can use the AWS Trusted Advisor to monitor your service limits.

- **Explanation:** AWS implements soft limits on resources (like the number of EC2 instances) per account/Region. You can request an increase (A). **Trusted Advisor** monitors service limits and alerts you when you approach them (D).

23. What is the AWS tool that enables you to use scripts to manage all AWS services and resources?

Answer: D. AWS CLI.

- **Explanation:** The **AWS Command Line Interface (CLI)** is a unified tool that allows you to control all AWS services from your command line using scripts.

24. What are the connectivity options that can be used to build hybrid cloud architectures? (Choose TWO)

Answer: C. AWS Direct Connect. and E. AWS VPN.

- **Explanation:** A **hybrid cloud** connects on-premises infrastructure to the AWS Cloud.
 - **AWS Direct Connect** provides a dedicated, private network connection.
 - **AWS VPN (Site-to-Site VPN)** provides a secure, encrypted connection over the public internet using IPsec.

25. A company has deployed a new web application on multiple Amazon EC2 instances. Which of the following should they use to ensure that the incoming HTTP traffic is distributed evenly across the instances?

Answer: D. AWS Application Load Balancer.

- **Explanation:** An **Application Load Balancer (ALB)** is specifically designed to distribute **HTTP/HTTPS** traffic (Layer 7) across multiple targets, such as EC2 instances, and is the recommended choice for web applications.

26. Which of the following AWS offerings is a MySQL-compatible relational database service that can scale capacity automatically based on demand?

Answer: B. Amazon Aurora.

- **Explanation:** **Amazon Aurora** is a MySQL and PostgreSQL-compatible relational database built for the cloud. Its Serverless option can automatically start up, shut down, and scale compute capacity based on the application's needs.

27. Which of the following can help protect your EC2 instances from DDoS attacks? (Choose TWO)

Answer: B. Security Groups. and E. Network Access Control Lists (Network ACLs).

- **Explanation:** Both **Security Groups** and **Network ACLs** are stateful and stateless firewalls, respectively, that control network traffic to and from EC2 instances at the instance or subnet level, helping to filter unwanted traffic and mitigate some types of DDoS attacks.

28. What is the AWS data warehouse service that supports a high level of query performance on large amounts of datasets?

Answer: A. Amazon Redshift.

- **Explanation:** **Amazon Redshift** is a fully managed, petabyte-scale cloud data warehouse service that is optimized for running complex analytic queries on large structured datasets.

29. Which of the following should be considered when performing a TCO analysis to compare the costs of running an application on AWS instead of on-premises?

Answer: D. Physical hardware.

- **Explanation:** A **Total Cost of Ownership (TCO) analysis** aims to compare all costs. When moving to AWS, the cost of purchasing, maintaining, and powering **physical hardware** is a major on-premises cost that is eliminated or absorbed by AWS.

30. How are AWS customers billed for Linux-based Amazon EC2 usage?

Answer: A. EC2 instances will be billed on one second increments, with a minimum of one minute.

- **Explanation:** Linux-based EC2 instances are billed per second (since 2017), with a minimum of 60 seconds (one minute).

31. Which of the following will impact the price paid for an EC2 instance? (Choose TWO)

Answer: A. Instance type. and C. Load balancing.

- **Explanation:**
 - The **Instance type** (e.g., t2.micro vs. m5.large) directly determines the price, as it defines the resources (CPU, RAM).

- **Load balancing** (using ELB) is a separate service that incurs its own hourly and data processing charges, adding to the total cost of running the application.
- Availability Zone (B) has no impact on EC2 price.

32. A customer spent a lot of time configuring a newly deployed Amazon EC2 instance. After the workload increases, the customer decides to provision another EC2 instance with an identical configuration. How can the customer achieve this?

Answer: D. By creating an AMI from the old instance and launching a new instance from it.

- **Explanation:** An **Amazon Machine Image (AMI)** is a template that contains the software configuration (operating system, application server, and applications) required to launch an EC2 instance. Creating an AMI from an existing instance is the standard way to replicate configurations.

33. A company uses AWS Organizations to manage all of its AWS accounts. Which of the following allows the company to restrict what services and actions are allowed in each individual account?

Answer: B. AWS Service Control Policies (SCPs).

- **Explanation: Service Control Policies (SCPs)** are managed within AWS Organizations. They offer central control over the maximum available permissions for all users and roles within an account, serving as a 'guardrail'.

34. Which of the following statements describes the AWS Cloud's agility?

Answer: C. AWS allows you to provision resources in minutes.

- **Explanation: Agility** refers to the ability to quickly and easily provision, deploy, and configure resources. Provisioning resources in minutes instead of weeks or months (the on-premises reality) is a core benefit of AWS agility.

35. What are the benefits of using the Amazon Relational Database Service? (Choose TWO)

Answer: A. Lower administrative burden. and C. Resizable compute capacity.

- **Explanation:**
 - **RDS** is a managed service, meaning AWS handles tasks like backups, patching, and availability, resulting in a **lower administrative burden** (A).
 - You can easily modify the instance size (compute capacity) up or down to match demand, providing **resizable compute capacity** (C).

- RDS does not scale automatically (D), nor does it give you complete control over the host (B).

36. What is the connectivity option that uses Internet Protocol Security (IPSec) to establish encrypted connectivity between an on-premises network and the AWS Cloud?

Answer: D. AWS Site-to-Site VPN.

- **Explanation:** An **AWS Site-to-Site VPN** uses IPSec to create a secure, encrypted tunnel over the public internet, connecting your on-premises network directly to your AWS VPC.

37. What is the minimum level of AWS support that provides 24x7 access to technical support engineers via phone and chat?

Answer: D. Business Support.

- **Explanation:** The **Business Support** plan is the minimum tier that provides 24x7 phone, chat, and email access to technical support engineers. Developer Support is only 24x7 via email.

38. Which of the following is used to control network traffic in AWS? (Choose TWO)

Answer: A. Network Access Control Lists (NACLs). and E. Security Groups.

- **Explanation:** **Security Groups** (stateful) act as firewalls for instances, and **Network Access Control Lists (NACLs)** (stateless) act as firewalls for subnets. Both are essential for controlling network traffic access in a VPC.

39. A company has developed a media transcoding application in AWS. The application is designed to recover quickly from hardware failures. Which one of the following types of instance would be the most cost-effective choice to use?

Answer: B. Spot Instances.

- **Explanation:** Since the application is fault-tolerant (can recover quickly from failures) and the workload is flexible (transcoding can be interrupted), **Spot Instances** are the most cost-effective solution, offering significant savings over On-Demand pricing.

40. Which AWS Service provides the current status of all AWS Services in all AWS Regions?

Answer: A. AWS Service Health Dashboard.

- **Explanation:** The **AWS Service Health Dashboard** provides the general, real-time status of all AWS services across all global regions. The Personal Health Dashboard is personalized to your account.

41. Which AWS service or feature can be used to call AWS Services from different programming languages?

Answer: A. AWS Software Development Kit.

- **Explanation:** **AWS Software Development Kits (SDKs)** allow you to interact with AWS services using API calls directly from code written in popular programming languages (e.g., Python, Java, JavaScript).

42. Which AWS Service can be used to register a new domain name?

Answer: B. Amazon Route 53.

- **Explanation:** **Amazon Route 53** is a highly available and scalable cloud Domain Name System (DNS) web service, which also includes domain name registration capabilities.

43. App development companies move their business to AWS to reduce time-to-market and improve customer satisfaction, what are the AWS automation tools that help them deploy their applications faster? (Choose TWO)

Answer: A. AWS CloudFormation. and D. AWS Elastic Beanstalk.

- **Explanation:**
 - **AWS CloudFormation** allows the infrastructure itself to be deployed quickly and consistently via code (**Infrastructure as Code**).
 - **AWS Elastic Beanstalk** automates the deployment, provisioning, and scaling of applications, reducing the time needed to get an application running.

44. Which AWS service provides cost-optimization recommendations?

Answer: A. AWS Trusted Advisor.

- **Explanation:** **AWS Trusted Advisor** provides recommendations across five pillars, one of which is **Cost Optimization**, suggesting ways to reduce spending (e.g., finding idle resources or recommending Reserved Instances).

45. A company has hundreds of VPCs in multiple AWS Regions worldwide. What service does AWS offer to simplify the connection management among the VPCs?

Answer: B. AWS Transit Gateway.

- **Explanation:** **AWS Transit Gateway** acts as a cloud router, simplifying the connectivity between VPCs, AWS accounts, and on-premises networks across multiple Regions using a single hub. This avoids the complexity of many-to-many VPC Peering (A).

46. What is one benefit and one drawback of buying a reserved EC2 instance? (Select TWO)

Answer: B. Reserved instances require at least a one-year pricing commitment. and D. Reserved instances provide a significant discount compared to on-demand instances.

- **Explanation:**
 - **Benefit (D):** Reserved Instances offer a significant discount (up to 75%) over On-Demand pricing.
 - **Drawback (B):** Reserved Instances require a commitment of one year or three years, meaning you are locked into the spending.

47. Why does every AWS Region contain multiple Availability Zones?

Answer: A. Multiple Availability Zones allows you to build resilient and highly available architectures.

- **Explanation:** Availability Zones are physically isolated data centers. Deploying an application across multiple AZs protects it from a failure in a single data center, which is the foundation for creating **resilient and highly available** architectures.

48. What is the most cost-effective purchasing option for running a set of EC2 instances that must always be available for a period of two months?

Answer: A. On-Demand Instances.

- **Explanation:** Since the requirement is for a continuous, uninterrupted period of only **two months**, the flexibility of **On-Demand Instances** is the best choice. Reserved Instances require a minimum commitment of one year, which is longer than the required two months. Spot Instances (B) are cheaper but can be interrupted.

49. Which of the following is a benefit of running an application in multiple Availability Zones?

Answer: D. Increases the availability of your application.

- **Explanation: Availability Zones (AZs)** are isolated data centers within a region. Deploying across multiple AZs ensures that if one zone fails, your application remains running in the other, directly **increasing its availability** (fault tolerance).

50. Data security is one of the top priorities of AWS. How does AWS deal with old storage devices that have reached the end of their useful life?

Answer: B. AWS destroys the old devices in accordance with industry-standard practices.

- **Explanation:** Under the Shared Responsibility Model, AWS is responsible for the disposal of storage media. AWS uses rigorous, industry-standard practices, such as demagnetization and physical destruction, to ensure data cannot be recovered from storage devices.

Practice Exam 4: Answers and Explanations

1. A developer needs to set up an SSL security certificate for a client's eCommerce website in order to use the HTTPS protocol. Which of the following AWS services can be used to deploy the required SSL server certificates? (Choose TWO)

Answer: B. AWS ACM. and D. AWS Identity & Access Management.

- **Explanation:**
 - **AWS Certificate Manager (ACM)** is the service for provisioning, managing, and deploying SSL/TLS certificates for use with AWS services (like ELB and CloudFront).
 - **AWS Identity & Access Management (IAM)** can also be used to store and deploy certificates that are imported from a third party.

2. Which of the following AWS services scale automatically without your intervention? (Choose TWO)

Answer: B. Amazon S3. and C. AWS Lambda.

- **Explanation:**
 - **Amazon S3** is object storage that scales to virtually unlimited capacity automatically.
 - **AWS Lambda** is a serverless compute service that automatically scales its execution capacity in response to incoming events and demand.

- EC2 and EMR require Auto Scaling group configuration, and EBS volume size must be manually adjusted (or configured to be adjusted via automation).

3. A company is planning to migrate an application from Amazon EC2 to AWS Lambda to use a serverless architecture. Which of the following will be the responsibility of AWS after migration? (Choose TWO)

Answer: B. Capacity management. and D. Operating system maintenance.

- **Explanation:** When using a **serverless** service like **AWS Lambda**, AWS is responsible for all underlying infrastructure operations, including automatically scaling the required compute capacity (**Capacity management**) and keeping the operating system and execution environment patched and updated (**Operating system maintenance**). The customer is still responsible for the application code and data management.

4. How do ELBs improve the reliability of your application?

Answer: D. By ensuring that only healthy targets receive traffic.

- **Explanation: Elastic Load Balancers (ELBs)** use **health checks** to continuously monitor the health of their registered targets (like EC2 instances). If a target fails the health check, the ELB stops sending traffic to it, improving application reliability.

5. A company needs to migrate their website from on-premises to AWS. Security is a major concern for them, so they need to host their website on hardware that is NOT shared with other AWS customers. Which of the following EC2 instance options meets this requirement?

Answer: C. Dedicated instances.

- **Explanation: Dedicated Instances** are Amazon EC2 instances that run on hardware dedicated to a single customer, ensuring no other AWS customer shares the host hardware, which addresses the specific security/compliance requirement.

6. A customer is planning to move billions of images and videos to be stored on Amazon S3. The customer has approximately 60 Petabytes of data to move. Which of the following AWS Services is the best choice to transfer the data to AWS?

Answer: C. Snowmobile.

- **Explanation: AWS Snowmobile** is an exabyte-scale data transfer service used to move extremely large amounts of data (up to 100 PB per Snowmobile) to AWS. Snowball (A) is for petabyte-scale transfers (up to 80 TB or 100 TB per device).

7. A company plans to migrate a large amount of archived data to AWS. The archived data must be maintained for a period of 5 years and must be retrievable within 5 hours of a request. What is the most cost-effective AWS storage service to use?

Answer: A. Amazon S3 Glacier.

- **Explanation:** **Amazon S3 Glacier** is an archival storage class designed for long-term data retention at the lowest cost. The Standard retrieval option for Glacier allows data to be retrieved within 3-5 hours, meeting the **5-hour requirement** and providing the **most cost-effective** solution for multi-year archival.

8. Which AWS Service is used to manage user permissions?

Answer: C. AWS IAM.

- **Explanation:** **AWS Identity and Access Management (IAM)** is the service you use to securely control access to AWS resources. You define permissions by creating IAM policies and attaching them to IAM users, groups, or roles.

9. Which support plan includes AWS Support Concierge Service?

Answer: C. Enterprise Support.

- **Explanation:** The **AWS Support Concierge Service** is a dedicated team of billing and account experts provided exclusively to customers with the **Enterprise Support** plan.

10. A company needs to track resource changes using the API call history. Which AWS service can help the company achieve this goal?

Answer: C. AWS CloudTrail.

- **Explanation:** **AWS CloudTrail** is a service that records all API calls and related events made by users, roles, or AWS services in your AWS environment. This log history is essential for security analysis, resource change tracking, and troubleshooting.

11. What are the benefits of using an AWS-managed service? (Choose TWO)

Answer: B. Allows customers to deliver new solutions faster. and C. Lowers operational complexity.

- **Explanation:** Managed services (like RDS, DynamoDB, S3) handle the operational burden (patching, maintenance, scaling), allowing the customer to focus on their application (**delivering solutions faster**) and reducing the need for heavy administrative tasks (**lowering operational complexity**).

12. Which of the following are use cases for Amazon S3? (Choose TWO)

Answer: A. Hosting static websites. and D. A media store for the CloudFront service.

- **Explanation:**

- **Amazon S3** can natively host **static websites**.
- S3 is the common origin store for content delivered via **Amazon CloudFront** (media, images, etc.).

13. What is the AWS' recommendation regarding access keys?

Answer: C. Rotate them regularly.

- **Explanation:** As a best practice for security, AWS recommends **rotating access keys regularly** (changing them frequently) to limit the window of exposure if a key is compromised.

14. What is the AWS IAM feature that provides an additional layer of security on top of user-name and password authentication?

Answer: D. MFA.

- **Explanation: Multi-Factor Authentication (MFA)** is an essential security feature that requires a user to provide two or more verification factors (e.g., password and a code from a token) to log in, significantly enhancing security.

15. What is the benefit of using an API to access AWS Services?

Answer: D. It allows for programmatic management of AWS resources.

- **Explanation:** Using APIs (via SDKs or the CLI) allows developers and system administrators to interact with AWS services using code and scripts, enabling **automation** and **programmatic management** of cloud infrastructure.

16. A company is planning to migrate a database with high read/write activity to AWS. What is the best storage option to use?

Answer: C. Amazon EBS.

- **Explanation: Amazon Elastic Block Store (EBS)** provides persistent block storage volumes that can be attached to EC2 instances. EBS volumes are highly available and designed for workloads that require high throughput and transactional performance, making them the best option for high read/write database activity.

17. How can AWS customers track and avoid over-spending on underutilized reserved instances?

Answer: C. Customers can use the AWS Budgets service to track the reserved instances usage and set up alert notifications when their utilization drops below the threshold that they define.

- **Explanation: AWS Budgets** allows you to set custom budgets or utilization targets (including Reserved Instance utilization). You can configure alerts to notify you when utilization drops below a threshold, helping you track and manage underutilized reservations.

18. What is the AWS service that provides five times the performance of a standard MySQL database?

Answer: A. Amazon Aurora.

- **Explanation: Amazon Aurora** is an AWS proprietary relational database engine that is compatible with MySQL and PostgreSQL. It is engineered to deliver performance significantly faster (up to five times) than standard MySQL.

19. What does AWS Service Catalog provide?

Answer: C. It simplifies organizing and governing commonly deployed IT services.

- **Explanation: AWS Service Catalog** allows organizations to create and manage catalogs of IT services that are approved for use on AWS. This simplifies the governance and standardized deployment of common applications and infrastructure components (e.g., a standard web server).

20. For managed services like Amazon DynamoDB, which of the below is AWS responsible for? (Choose TWO)

Answer: C. Patching the database software. and D. Operating system maintenance.

- **Explanation:** In the Shared Responsibility Model for a Platform as a Service (PaaS) like DynamoDB, AWS manages the underlying infrastructure, including the host **Operating System maintenance** and the **database software patching**. The customer is responsible for credentials and policies (A, B, E).

21. Which of the following AWS Services helps with planning application migration to the AWS Cloud?

Answer: B. AWS Application Discovery Service.

- **Explanation:** **AWS Application Discovery Service** helps enterprises plan migration projects by automatically identifying applications running in on-premises data centers, their dependencies, and their performance profile, which is crucial for detailed migration planning.

22. A company is trying to analyze the costs applied to their AWS account recently. Which of the following provides them the most granular data about their AWS costs and usage?

Answer: C. AWS Cost & Usage Report.

- **Explanation:** The **AWS Cost & Usage Report (CUR)** contains the most comprehensive, detailed, and granular dataset about your AWS costs and usage, often broken down by hour or resource. AWS Cost Explorer (B) visualizes the data, but CUR is the underlying source of the detail.

23. Which statement best describes the concept of an AWS region?

Answer: C. An AWS Region is a geographical location with a collection of Availability Zones.

- **Explanation:** An **AWS Region** is a physical location in the world where AWS clusters its data centers. Each Region consists of two or more isolated locations known as **Availability Zones (AZs)**.

24. A company has discovered that multiple S3 buckets were deleted, but it is unclear who deleted the buckets. Which of the following can the company use to determine the identity that deleted the buckets?

Answer: D. CloudTrail logs.

- **Explanation:** The action of deleting an S3 bucket is an API call, and **AWS CloudTrail** records all API activity, including the identity (user or role) that performed the action, the time, and the request parameters.

25. Which of the following are factors in determining the appropriate database technology to use for a specific workload? (Choose TWO)

Answer: C. The number of reads and writes per second. and D. The nature of the queries.

- **Explanation:**
 - **The number of reads and writes per second (C)** (throughput) dictates the required performance and scaling capabilities, guiding the choice between relational, NoSQL, or caching databases.

- **The nature of the queries (D)** (simple key-value lookups vs. complex joins) determines if a relational (SQL) or non-relational (NoSQL) database is most suitable.

26. What are the benefits of implementing a tagging strategy for AWS resources? (Choose TWO)

Answer: A. Quickly identify resources that belong to a specific project. and E. Track AWS spending across multiple resources.

- **Explanation: Tags** are key-value pairs assigned to AWS resources. They are used for:
 - **Resource Identification/Management (A):** Organizing resources by project, owner, or environment.
 - **Cost Allocation (E):** Tracking costs by applying cost allocation tags to the billing report, allowing you to see spending per project or department.

27. What are AWS shared controls?

Answer: C. Controls that apply to both the infrastructure layer and customer layers.

- **Explanation: Shared controls** are controls where both AWS and the customer have responsibilities. For example, **Patch Management** is a shared control: AWS patches the infrastructure layer, and the customer patches the guest operating system (OS) on an EC2 instance.

28. Which design principles relate to performance efficiency in AWS? (Choose TWO)

Answer: A. Build multi-region architectures to better serve global customers. and D. Use serverless architectures.

- **Explanation: The Performance Efficiency** pillar focuses on using IT and computing resources efficiently.
 - **Multi-Region architectures (A)** improve global performance by minimizing latency for users worldwide.
 - **Serverless architectures (D)** (like Lambda and S3) are often inherently highly performant and scale automatically to meet demand.

29. Which of the below are responsibilities of the customer when using Amazon EC2? (Choose TWO)

Answer: A. Protecting sensitive data. and E. Installing and configuring third-party software.

- **Explanation:** EC2 is an IaaS service, meaning the customer is responsible for **security in the cloud**, including data protection, encryption, and all software installed on the guest operating system (OS). AWS handles infrastructure and hardware maintenance.

30. Why would an organization decide to use AWS over an on-premises data center? (Choose TWO)

Answer: C. Elastic resources. and E. Cost Savings.

- **Explanation:**
 - **Elasticity (C)** allows resources to scale up or down automatically based on demand, preventing over-provisioning and idle resources.
 - This elasticity, combined with utility pricing, often results in significant **Cost Savings (E)** by replacing large upfront CapEx with variable OpEx.

31. Which of the following AWS services can help you perform security analysis and regulatory compliance auditing? (Choose TWO)

Answer: A. Amazon Inspector. and E. AWS Config.

- **Explanation:**
 - **Amazon Inspector** performs automated security assessments of applications deployed on EC2 instances for vulnerabilities.
 - **AWS Config** provides an inventory of your AWS resources, their configuration history, and notifies you of configuration changes, which is critical for **auditing and compliance** against defined rules.

32. Which of the following is NOT a characteristic of Amazon Elastic Compute Cloud (Amazon EC2)?

Answer: A. Amazon EC2 is considered a Serverless Web Service.

- **Explanation:** Amazon EC2 is a virtual machine service, which is considered **Infrastructure as a Service (IaaS)**, not a **Serverless** service (which would be Lambda or Fargate). The customer still has to manage the virtual server/OS.

33. What is the AWS Compute service that executes code only when triggered by events?

Answer: A. AWS Lambda.

- **Explanation:** **AWS Lambda** is the event-driven, serverless compute service that runs code only in response to events (like an S3 upload, a database modification, or an API request).

34. Both AWS and traditional IT distributors provide a wide range of virtual servers to meet their customers' requirements. What is the name of these virtual servers in AWS?

Answer: D. Amazon EC2 Instances.

- **Explanation:** The fundamental virtual server resource provided by AWS is called an **Amazon EC2 Instance**.

35. What is the framework created by AWS Professional Services that helps organizations design a road map to successful cloud adoption?

Answer: C. AWS CAF.

- **Explanation:** The **AWS Cloud Adoption Framework (CAF)** provides guidance and best practices across six perspectives (Business, People, Governance, Platform, Security, and Operations) to help organizations plan and manage their move to the cloud.

36. TYMO Cloud Corp is looking forward to migrating their entire on-premises data center to AWS. What tool can they use to perform a cost-benefit analysis of moving to the AWS Cloud?

Answer: B. AWS TCO Calculator.

- **Explanation:** The **AWS Total Cost of Ownership (TCO) Calculator** helps compare the costs of running an application on-premises versus on AWS by providing a comprehensive comparison of all associated costs.

37. Which of the following activities supports the Operational Excellence pillar of the AWS Well-Architected Framework?

Answer: C. Using AWS CloudFormation to manage infrastructure as code.

- **Explanation:** The **Operational Excellence** pillar focuses on running and monitoring systems and continually improving processes. Using **AWS CloudFormation** to manage infrastructure as code (IaC) is a key principle, as it ensures consistent, repeatable, and traceable deployments.

38. Why do many startup companies prefer AWS over traditional on-premises solutions? (Choose TWO)

Answer: C. Using AWS, they can reduce time-to-market by focusing on business activities rather than on building and managing data centers. and E. Using AWS allows companies to replace large capital expenditure with low variable costs.

- **Explanation:**
 - AWS allows startups to **accelerate time-to-market (C)** by eliminating the time spent provisioning hardware.
 - AWS replaces large CapEx (buying servers) with **variable OpEx (E)**, which is crucial for cash-sensitive startups.

39. What are the benefits of using DynamoDB? (Choose TWO)

Answer: A. Automatically scales to meet required throughput capacity. and D. Offers extremely low (single-digit millisecond) latency.

- **Explanation: Amazon DynamoDB** is a fully managed NoSQL database that offers:
 - **Automatic scaling (A)** for both storage and throughput.
 - **High performance (D)**, typically providing single-digit millisecond latency.

40. Which of the following can be used to protect data at rest on Amazon S3? (Choose TWO)

Answer: C. Permissions. and D. Decryption.

- **Explanation:** While encryption is done before placing the data, protecting data **at rest** requires:
 - **Permissions (C):** Using S3 Bucket Policies and IAM Policies to control who can access the data.
 - **Encryption/Decryption (D):** Data is stored encrypted, so access requires proper **decryption** keys, ensuring unauthorized parties cannot read the data.

41. As part of the AWS Migration Acceleration Program (MAP), what does AWS provide to accelerate Enterprise adoption of AWS? (Choose TWO)

Answer: A. AWS Partners. and C. AWS Professional Services.

- **Explanation:** The **Migration Acceleration Program (MAP)** provides consulting support from **AWS Professional Services** and **AWS Partners** to help enterprises build a migration plan and execute the migration project successfully.

42. AWS recommends some practices to help organizations avoid unexpected charges on their bill. Which of the following is NOT one of these practices?

Answer: B. Deleting unused AutoScaling launch configuration.

- **Explanation:** Auto Scaling **Launch Configurations** are templates and do not incur direct charges. The other options (A, C, D) are resources that are charged even when unused (EBS volumes, Elastic IPs, ELBs) and should be deleted to save costs.

43. What is the AWS tool that can help a company visualize their AWS spending in the last few months?

Answer: A. AWS Cost Explorer.

- **Explanation:** **AWS Cost Explorer** is the primary tool for visualizing, analyzing, and managing your AWS costs and usage over time, including historical spending trends.

44. When running a workload in AWS, the customer is NOT responsible for: (Select TWO)

Answer: C. Data center operations. and E. Infrastructure security.

- **Explanation:** These fall under the **Security of the Cloud**, which is the responsibility of AWS. AWS manages the physical **Data center operations** and the security of the underlying **Infrastructure**. The customer is responsible for security *in* the cloud (penetration testing, capacity, auditing).

45. Which AWS service can be used to send promotional text messages (SMS) to more than 200 countries worldwide?

Answer: C. Amazon Simple Notification Service (Amazon SNS).

- **Explanation:** **Amazon Simple Notification Service (SNS)** is a fully managed messaging service that supports application-to-person (A2P) use cases, including sending **SMS messages** globally.

46. Which of the following allows you to create new RDS instances? (Choose TWO)

Answer: C. AWS CloudFormation. and E. AWS Management Console.

- **Explanation:**
 - The **AWS Management Console** provides a web-based GUI for launching RDS instances manually.

- **AWS CloudFormation** allows for the programmatic and automated creation of RDS instances using templates (**Infrastructure as Code**).

47. One of the major advantages of using AWS is cost savings. What does AWS provide to reduce the cost of running Amazon EC2 instances?

Answer: C. Per-second instance billing.

- **Explanation:** AWS shifted to **per-second billing** (with a one-minute minimum) for Linux EC2 instances, which reduces costs by ensuring customers only pay for the compute time they actually consume, instead of rounding up to the nearest hour.

48. Which AWS Group assists customers in achieving their desired business outcomes?

Answer: B. AWS Professional Services.

- **Explanation:** **AWS Professional Services** is a global team of experts who engage directly with customers to provide consulting and technical assistance, helping them accelerate their adoption of AWS and achieve specific business goals.

49. Which AWS service or feature is used to manage the keys used to encrypt customer data?

Answer: A. AWS KMS.

- **Explanation:** **AWS Key Management Service (KMS)** is a managed service that makes it easy to create and control encryption keys used to encrypt your data, ensuring secure key management and usage across various AWS services.

50. Which AWS Service allows customers to download AWS SOC & PCI reports?

Answer: B. AWS Artifact.

- **Explanation:** **AWS Artifact** is a self-service portal where you can access AWS compliance reports, such as Service Organization Control (**SOC**) reports and Payment Card Industry (**PCI**) reports.

Practice Exam 5: Answers and Explanations

1. A company is using EC2 Instances to run their e-commerce site on the AWS platform. If the site becomes unavailable, the company will lose a significant amount of money for each minute the site is unavailable. Which design principle should the company use to minimize the risk of an outage?

Answer: C. Fault Tolerance.

- **Explanation: Fault Tolerance** is the design principle that ensures a system can continue to operate despite the failure of one or more components. For an e-commerce site with high costs for downtime, designing for fault tolerance (e.g., using multiple EC2 instances across multiple Availability Zones, Auto Scaling, and Load Balancing) is essential to minimize the risk of an outage.

2. You decide to buy a reserved instance for a term of one year. Which option provides the largest total discount?

Answer: A. All up-front reservation.

- **Explanation:** When purchasing an Amazon EC2 Reserved Instance (RI), the highest percentage discount is obtained by choosing the **All Up-front** payment option. The greater the upfront commitment, the larger the total discount.

3. What features does AWS offer to help protect your data in the Cloud? (Choose TWO)

Answer: A. Access control. and C. Data encryption.

- **Explanation:**
 - **Access control (A)** (e.g., IAM policies, Security Groups) limits who can access the data and how.
 - **Data encryption (C)** (e.g., using AWS KMS, S3 encryption) protects the data both in transit and at rest from being read by unauthorized parties.

4. An AWS customer has used one Amazon Linux instance for 2 hours, 5 minutes and 9 seconds, and one CentOS instance for 4 hours, 23 minutes and 7 seconds. How much time will the customer be billed for?

Answer: B. 2 hours, 5 minutes and 9 seconds for the Linux instance and 4 hours, 23 minutes and 7 seconds for the CentOS instance.

- **Explanation:** **Linux-based** instances (like Amazon Linux and CentOS) are generally billed in **per-second increments** (with a 60-second minimum). Therefore, the customer is billed for the exact time consumed for both instances.

5. What is the AWS Support feature that allows customers to manage support cases programmatically?

Answer: C. AWS Support API.

- **Explanation:** The **AWS Support API** allows developers to programmatically create, manage, and communicate with support cases, which is typically used by customers with high-level support plans for integrating support functions into their internal tools.

6. Which methods can be used by customers to interact with AWS Identity and Access Management (IAM)? (Choose TWO)

Answer: A. AWS CLI. and C. AWS SDKs.

- **Explanation:** IAM, like most AWS services, can be managed programmatically using the **AWS Command Line Interface (CLI)** and the **AWS Software Development Kits (SDKs)**, in addition to the AWS Management Console.

7. Which of the following are types of AWS Identity and Access Management (IAM) identities? (Choose TWO)

Answer: C. IAM Roles. and D. IAM Users.

- **Explanation:** The primary IAM identities are:
 - **IAM Users:** Permanent identity for a person or service that interacts with AWS.
 - **IAM Roles:** An identity that can be assumed by anyone who needs temporary access (users, applications, or services).
 - IAM Policies, Resource Groups, and Organizations are management/governance tools, not identities.

8. Which of the following Amazon RDS features facilitates offloading of database read activity?

Answer: D. Read Replicas.

- **Explanation:** **Read Replicas** are asynchronous copies of your primary RDS database that can be used to serve high-volume read traffic, thereby offloading the load from the primary database instance and improving application performance.

9. How does AWS notify customers about security and privacy events pertaining to AWS services?

Answer: B. Using Security Bulletins.

- **Explanation:** AWS publishes detailed **Security Bulletins** to inform customers about security and privacy events, providing relevant details and recommended actions.

10. Which IAM entity can best be used to grant temporary access to your AWS resources?

Answer: C. IAM Roles.

- **Explanation: IAM Roles** are designed to grant temporary access credentials to users or services, providing a secure method for cross-account access or for giving permissions to applications running on EC2 instances without using permanent access keys.

11. A company has a web application that is hosted on a single EC2 instance and is approaching 100 percent CPU Utilization during peak loads. Rather than scaling the server vertically, the company has decided to deploy three Amazon EC2 instances in parallel and to distribute traffic across the three servers. What AWS Service should the company use to distribute the traffic evenly?

Answer: B. AWS Application Load Balancer (ALB).

- **Explanation:** An **Application Load Balancer (ALB)** is a type of Elastic Load Balancer (ELB) specifically designed to distribute incoming application traffic, such as HTTP/HTTPS, across multiple targets (like EC2 instances), ensuring even distribution and preventing any single server from being overwhelmed.

12. Which of the following approaches will help you eliminate human error and automate the process of creating and updating your AWS environment?

Answer: C. Use code to provision and operate your AWS infrastructure.

- **Explanation:** The practice of using code to manage infrastructure is called **Infrastructure as Code (IaC)** (e.g., using AWS CloudFormation or Terraform). IaC ensures that resources are provisioned consistently, repeatedly, and automatically, which reduces manual errors and improves operational efficiency.

13. A company is seeking to better secure its AWS account from unauthorized access. Which of the below options can the customer use to achieve this goal?

Answer: C. Require Multi-Factor Authentication (MFA) for all IAM User access.

- **Explanation: Multi-Factor Authentication (MFA)** is a critical security measure that requires users to provide two forms of verification (something they know and something they have). Requiring it for all IAM users significantly reduces the risk of unauthorized access due to compromised passwords.

14. Which AWS Service offers volume discounts based on usage?

Answer: B. Amazon S3.

- **Explanation: Amazon S3** offers volume tiering, meaning the cost per GB decreases as the total amount of storage you use increases, which is a form of volume discount based on usage.

15. Which of the following factors should be considered when determining the region in which AWS Resources will be deployed? (Choose TWO)

Answer: B. Data sovereignty. and C. Cost.

- **Explanation:**
 - **Data sovereignty (B):** Legal or regulatory requirements may mandate that data remain within a specific country or region.
 - **Cost (C):** The price of the same AWS service can vary between different Regions.
 - Geographic proximity (E) is also a factor, but regulatory and cost concerns are often the top deciding factors for region selection.

16. You are running a financial services web application on AWS. The application uses a MySQL database to store the data. Which of the following AWS services would improve the performance of your application by allowing you to retrieve information from fast in-memory caches?

Answer: C. Amazon ElastiCache.

- **Explanation: Amazon ElastiCache** is a fully managed service that simplifies the deployment and management of in-memory data stores (like Redis or Memcached), which are used to cache frequently accessed data, significantly reducing database load and improving application performance.

17. What are the advantages of using Auto Scaling Groups for EC2 instances?

Answer: B. Auto Scaling Groups scales EC2 instances in multiple Availability Zones to increase application availability and fault tolerance.

- **Explanation:** The key advantage of **Auto Scaling Groups (ASGs)** is that they automatically replace unhealthy instances and ensure that your application maintains

capacity across multiple **Availability Zones (AZs)**, which directly increases fault tolerance and high availability.

18. The TCO gap between AWS infrastructure and traditional infrastructure has widened over the recent years. Which of the following could be the reason for that?

Answer: C. AWS continues to lower the cost of cloud computing for its customers.

- **Explanation:** A major reason for the widening TCO gap is that **AWS continuously lowers its pricing** as it achieves greater economies of scale, making the cloud more cost-effective over time compared to the static or increasing costs of traditional infrastructure.

19. Which of the following are examples of the customer's responsibility to implement "security IN the cloud"? (Choose TWO)

Answer: A. Building a schema for an application. and E. File system encryption.

- **Explanation:** **Security IN the cloud** is the customer's responsibility. This includes securing their data, operating systems, applications, and configurations. **Building a database schema** (A) and configuring **file system encryption** (E) are examples of customer-managed security controls.

20. Which of the following is a type of MFA device that customers can use to protect their AWS resources?

Answer: B. U2F Security Key.

- **Explanation:** **U2F (Universal 2nd Factor) Security Keys** (like YubiKeys) are a type of physical hardware device that can be registered as an MFA device with AWS.

21. A company is seeking to deploy an existing .NET application onto AWS as quickly as possible. Which AWS Service should the customer use to achieve this goal?

Answer: B. AWS Elastic Beanstalk.

- **Explanation:** **AWS Elastic Beanstalk** is a Platform as a Service (PaaS) solution that simplifies and automates the process of deploying and scaling applications (including .NET), allowing the customer to quickly get their application running without managing the underlying infrastructure.

22. Which of the following is NOT a factor when estimating the costs of Amazon EC2? (Choose TWO)

Answer: B. Number of security groups. and D. Number of Hosted Zones.

- **Explanation:**

- **Security Groups (B)** and **Hosted Zones (D)** (which are Route 53 resources) do not directly contribute to the cost of running an EC2 instance.
- EC2 costs are primarily determined by the instance type/size, the region, and the **time the instances are running (A)**, and the **number of instances (E)**.

23. Which AWS Service helps enterprises extend their on-premises storage to AWS in a cost-effective manner?

Answer: B. AWS Storage Gateway.

- **Explanation: AWS Storage Gateway** is a hybrid storage service that connects an on-premises software appliance with cloud-based storage, allowing enterprises to seamlessly and cost-effectively extend their on-premises storage to the AWS cloud (e.g., for backup and archival).

24. A company is building an online cloud storage platform. They need a storage service that can scale capacity automatically, while minimizing cost. Which AWS storage service should the company use to meet these requirements?

Answer: A. Amazon Simple Storage Service.

- **Explanation: Amazon Simple Storage Service (S3)** is an object storage service with virtually unlimited scalability that automatically handles capacity increases and is generally the most cost-effective solution for large amounts of unstructured data.

25. You have just hired a skilled sys-admin to join your team. As usual, you have created a new IAM user for him to interact with AWS services. On his first day, you ask him to create snapshots of all existing Amazon EBS volumes and save them in a new Amazon S3 bucket. However, the new member reports back that he is unable to create neither EBS snapshots nor S3 buckets. What might prevent him from doing this simple task?

Answer: D. There is a non-explicit deny to all new users.

- **Explanation:** By default, a new **IAM user** is created with **no permissions** (an implicit deny to all actions). To perform any action, the sys-admin must be granted permissions via an attached IAM policy.

26. An external auditor is requesting a log of all accesses to the AWS resources in the company's account. Which of the following services will provide the auditor with the requested information?

Answer: A. AWS CloudTrail.

- **Explanation:** **AWS CloudTrail** records all API calls made to your AWS environment, providing a complete log of user, role, and service activity, which is the exact information required for security and auditing purposes.

27. Which of the below options is true of Amazon Cloud Directory?

Answer: A. Amazon Cloud Directory allows the organization of hierarchies of data across multiple dimensions.

- **Explanation:** **Amazon Cloud Directory** is a directory service that enables you to create flexible, multi-hierarchy directories (like organizational charts, device registries, or course catalogs) for organizing large amounts of application data.

28. A user has opened a "Production System Down" support case to get help from AWS Support after a production system disruption. What is the expected response time for this type of support case?

Answer: B. 15 minutes.

- **Explanation:** For the **Enterprise Support** plan, the target response time for a **Critical** system down issue ("Production System Down" being the highest severity) is **15 minutes**. For Business Support, it is one hour.

29. Which of the below options is a best practice for making your application on AWS highly available?

Answer: A. Deploy the application to at least two Availability Zones.

- **Explanation:** High availability requires protection against a single point of failure. **Availability Zones (AZs)** are physically isolated data centers. Deploying an application to **at least two AZs** ensures that if one fails, the application remains operational, making it highly available.

30. Which of the following should be taken into account when performing a TCO analysis regarding the costs of running an application on AWS VS on-premises? (Choose TWO)

Answer: A. Labor and IT costs. and B. Cooling and power consumption.

- **Explanation:** When comparing TCO, you must account for all costs eliminated by moving to the cloud:
 - **Labor and IT costs (A):** Reduced time managing infrastructure.
 - **Cooling and power consumption (B):** Eliminated data center facility costs.

31. Your company requires a response time of less than 15 minutes from support interactions about their business-critical systems that are hosted on AWS if those systems go down. Which AWS Support Plan should this company use?

Answer: D. AWS Enterprise Support.

- **Explanation:** Only the **AWS Enterprise Support** plan offers a target response time of **15 minutes** for a critical (production system down) issue.

32. Which of the following AWS offerings are serverless services? (Choose TWO)

Answer: B. AWS Lambda. and C. Amazon DynamoDB.

- **Explanation:**
 - **AWS Lambda** is a serverless compute service.
 - **Amazon DynamoDB** is a serverless NoSQL database.
 - **Serverless** means AWS manages the underlying servers, scaling, and capacity for you. EC2, EMR, and RDS all require you to select and manage a server/instance size.

33. Which AWS service enables you to quickly purchase and deploy SSL/TLS certificates?

Answer: B. AWS ACM.

- **Explanation: AWS Certificate Manager (ACM)** allows you to easily provision, manage, and deploy public and private SSL/TLS certificates for use with AWS services.

34. Which AWS Service provides integration with Chef to automate the configuration of EC2 instances?

Answer: B. AWS OpsWorks.

- **Explanation: AWS OpsWorks** is a configuration management service that provides managed instances of Chef and Puppet, which are automation platforms that use code to configure and deploy software.

35. A customer is seeking to store objects in their AWS environment and to make those objects downloadable over the internet. Which AWS Service can be used to accomplish this?

Answer: C. Amazon S3.

- **Explanation:** **Amazon Simple Storage Service (S3)** is the service designed for storing objects (files) and can easily be configured to make those objects publicly accessible and downloadable over the internet.

36. Which of the following services can be used to monitor the HTTP and HTTPS requests that are forwarded to Amazon CloudFront?

Answer: A. AWS WAF.

- **Explanation:** **AWS WAF (Web Application Firewall)** can be deployed with Amazon CloudFront (and Application Load Balancer) to monitor and filter HTTP and HTTPS traffic based on user-defined rules to protect against common web exploits.

37. A company is migrating a web application to AWS. The application's compute capacity is continually utilized throughout the year. Which of the below options offers the company the most cost-effective solution?

Answer: D. Reserved Instances.

- **Explanation:** For a workload that has **continual (consistent)** utilization over a long period (at least one year), **Reserved Instances (RIs)** provide the largest discount and are the most cost-effective option compared to On-Demand (A) or Spot (C).

38. A company wants to grant a new employee long-term access to manage Amazon DynamoDB databases. Which of the following is a recommended best-practice when granting these permissions?

Answer: C. Create an IAM user and attach a policy with Amazon DynamoDB access permissions.

- **Explanation:** The best practice is to adhere to the principle of **Least Privilege**. You should:
 1. Create a dedicated **IAM User** for the employee (long-term access).
 2. Attach a specific IAM **policy** that grants *only* the necessary permissions (**DynamoDB access**) and nothing more.

39. When granting permissions to applications running on Amazon EC2 instances, which of the following is considered best practice?

Answer: C. Use temporary security credentials (IAM roles) instead of long-term access keys.

- **Explanation:** The best practice is to use **IAM roles** to grant permissions to applications running on EC2 instances. Roles provide **temporary security credentials** that are automatically rotated, eliminating the security risk of storing long-term access keys on the instance.

40. Which of the following will help AWS customers save on costs when migrating their workloads to AWS?

Answer: B. Use existing third-party software licenses on AWS.

- **Explanation:** Many commercial software licenses (e.g., Microsoft, Oracle) are portable. By choosing to use your **existing third-party software licenses (BYOL - Bring Your Own License)** on AWS, you avoid having to pay AWS for the software licensing on top of the compute cost, leading to significant savings.

41. An organization has a legacy application designed using monolithic-based architecture. Which AWS Service can be used to decouple the components of the application?

Answer: A. Amazon SQS.

- **Explanation:** **Amazon Simple Queue Service (SQS)** is a managed message queuing service that allows you to separate the sending and receiving components of an application. By putting messages into a queue, the components become **decoupled** (loose coupling), which is a key step in migrating from monolithic to microservices architecture.

42. Which of the following can be used to enable the Virtual Multi-Factor Authentication? (Choose TWO)

Answer: B. AWS CLI. and C. AWS Identity and Access Management (IAM).

- **Explanation:** **Virtual MFA** is a feature managed through the **AWS Identity and Access Management (IAM)** service (C). It can be configured using the **AWS Management Console**, programmatically via **AWS CLI** (B), or using the SDKs.

43. According to best practices, which of the below options is best suited for processing a large number of binary files?

Answer: D. Running EC2 instances in parallel.

- **Explanation:** Processing a large number of files is an easily **parallelizable** task. By using multiple (or a fleet of) **EC2 instances in parallel** (horizontal scaling), the workload can be distributed and completed much faster than by simply using a single, larger instance (vertical scaling).

44. A company is planning to use Amazon S3 and Amazon CloudFront to distribute its video courses globally. What tool can the company use to estimate the costs of these services?

Answer: B. AWS Pricing Calculator.

- **Explanation:** The **AWS Pricing Calculator** is the correct tool for estimating the monthly costs of using AWS services (like S3 and CloudFront) based on projected usage volumes.

45. What should you do if you see resources, which you don't remember creating, in the AWS Management Console? (Choose TWO)

Answer: D. Open an investigation and delete any potentially compromised IAM users. and E. Change your AWS root account password and the passwords of any IAM users.

- **Explanation:** This is a strong indication of a security breach. The recommended response is to:
 1. **Change passwords (E)** immediately for the root account and all IAM users/access keys to lock out unauthorized users.
 2. **Open an investigation (D)** using CloudTrail logs and **delete or disable** any compromised IAM identities and delete the unauthorized resources.

46. A key practice when designing solutions on AWS is to minimize dependencies between components so that the failure of a single component does not impact other components. What is this practice called?

Answer: B. Loosely coupling.

- **Explanation: Loosely coupling** (or decoupling) is a fundamental cloud design principle where components are independent, so a failure in one does not cascade and cause the failure of the entire system.

47. Which AWS Service offers an NFS file system that can be mounted concurrently from multiple EC2 instances?

Answer: A. Amazon Elastic File System.

- **Explanation: Amazon Elastic File System (EFS)** provides a scalable, fully managed **NFS (Network File System)** file system that can be shared and mounted concurrently by thousands of Amazon EC2 instances across multiple Availability Zones.

48. Availability Zones within a Region are connected over low-latency links. Which of the following is a benefit of these links?

Answer: D. Make synchronous replication of your data possible.

- **Explanation:** The ultra-low latency networking between Availability Zones allows for the **synchronous replication** of data (e.g., for Multi-AZ databases or clusters). This ensures zero data loss during a failover, which is essential for high availability.

49. Which of the following are true regarding the languages that are supported on AWS Lambda? (Choose TWO)

Answer: B. Lambda natively supports a number of programming languages such as Node.js, Python, and Java. and E. Lambda can support any programming language using an API.

- **Explanation:**
 - **AWS Lambda** provides native runtime support for popular languages like Python, Node.js, Java, C#, Go, and Ruby.
 - It also supports custom runtimes using the **Lambda Runtime API**, which allows you to run code in virtually **any programming language**.

50. What are the capabilities of AWS X-Ray? (Choose TWO)

Answer: B. Facilitates tracking of user requests to identify application issues. and C. Helps improve application performance.

- **Explanation: AWS X-Ray** is a tracing service that helps developers analyze and debug production, distributed applications.
 - It collects data to trace user requests through all application components (**tracking user requests**).
 - By identifying performance bottlenecks and errors, it directly helps in efforts to **improve application performance**.

Practice Exam 6: Answers and Explanations

1. Which of the following is true regarding the AWS availability zones and edge locations?

Answer: D. An AWS Availability Zone is an isolated location within an AWS Region, however edge locations are located in multiple cities worldwide.

- **Explanation:** An **Availability Zone (AZ)** is an isolated physical data center within a single **AWS Region**. **Edge Locations** are separate, smaller facilities located in many major cities around the world, used by services like Amazon CloudFront to cache content and reduce latency for global users.

2. Which features are included in the AWS Business Support Plan? (Choose TWO)

Answer: A. 24x7 access to customer service. and C. Access to the Infrastructure Event Management (IEM) feature for additional fee.

- **Explanation:**
 - **AWS Business Support** provides 24x7 access to Cloud Support Engineers via phone, chat, and email (**A**).
 - **IEM (Infrastructure Event Management)** is an optional engagement, typically charged separately, available starting with the Business Support plan (**C**).
 - IEM is included at no additional cost starting with the Enterprise Support plan, which also includes the TAM feature (D).

3. A company is developing a mobile application and wants to allow users to use their Amazon, Apple, Facebook, or Google identities to authenticate to the application. Which AWS Service should the company use for this purpose?

Answer: C. Amazon Cognito.

- **Explanation:** **Amazon Cognito** provides authentication, authorization, and user management for web and mobile applications. It easily integrates with popular social identity providers (Amazon, Apple, Facebook, Google) to allow users to sign in with their existing credentials.

4. Which AWS Service allows customers to create a template that programmatically defines policies and configurations of all AWS resources as code and so that the same template can be reused among multiple projects?

Answer: A. AWS CloudFormation.

- **Explanation: AWS CloudFormation** is an Infrastructure as Code (IaC) service that allows you to model and provision AWS and third-party resources in your cloud environment. The template (in JSON or YAML) defines the entire infrastructure stack and can be reused.

5. Which of the following are advantages of using AWS as a cloud computing provider? (Choose TWO)

Answer: D. Eliminates the need to guess on infrastructure capacity needs. and E. Enables customers to trade their capital expenses for operational expenses.

- **Explanation:**
 - **Eliminating capacity guessing (D)** is possible due to **elasticity**—you can scale resources up or down on demand.
 - **Trading CapEx for OpEx (E)** is a core benefit: you pay for resources as you consume them (variable cost) instead of making large upfront investments in hardware (fixed cost).

6. A customer is planning to migrate their Microsoft SQL Server databases to AWS. Which AWS Services can the customer use to run their Microsoft SQL Server database on AWS? (Choose TWO)

Answer: B. Amazon Elastic Compute Cloud. and C. Amazon RDS.

- **Explanation:**
 - **Amazon RDS** supports Microsoft SQL Server as a managed database service (C).
 - You can also install the Microsoft SQL Server database software yourself on a standard **Amazon EC2** instance (B).

7. Which AWS Service can perform health checks on Amazon EC2 instances?

Answer: B. Amazon Route 53.

- **Explanation: Amazon Route 53** can be configured to perform health checks on various endpoints, including EC2 instances, and route traffic away from unhealthy endpoints. Auto Scaling and Elastic Load Balancing also perform health checks, but Route 53 is the global DNS service that can make routing decisions based on health.

8. A company is developing an application that will leverage facial recognition to automate photo tagging. Which AWS Service should the company use for facial recognition?

Answer: D. Amazon Rekognition.

- **Explanation:** **Amazon Rekognition** is a deep learning-based image and video analysis service that provides capabilities for tasks such as facial recognition, object and scene detection, and image moderation.

9. Which of the following are examples of AWS-managed databases? (Choose TWO)

Answer: A. Amazon Neptune. and E. Amazon RDS for MySQL.

- **Explanation:**
 - **Amazon Neptune (A)** is a fully managed graph database service.
 - **Amazon RDS for MySQL (E)** is a fully managed relational database service.
 - Services running on EC2 (C, D) are customer-managed, not AWS-managed.

10. A company's AWS workflow requires that it periodically perform large-scale image and video processing jobs. The customer is seeking to minimize cost and has stated that the amount of time it takes to process these jobs is not critical, but that cost minimization is the most important factor in designing the solution. Which EC2 instance class is best suited for this processing?

Answer: C. EC2 Spot Instances.

- **Explanation:** **Spot Instances** allow you to bid on spare EC2 capacity, often resulting in significant discounts. Since the workload is periodic, large-scale, and **can tolerate interruption** (time is not critical), Spot Instances are the most cost-effective option.

11. There is a requirement to grant a DevOps team full administrative access to all resources in an AWS account. Who can grant them these permissions?

Answer: A. AWS account owner.

- **Explanation:** Permissions for IAM users and groups within an AWS account can only be granted by an authorized entity **within that account**, typically the **AWS account owner** (root user) or an IAM user with appropriate permissions management rights. AWS staff (B, C, D) cannot manage customer permissions.

12. You need to migrate a large number of on-premises workloads to AWS. Which AWS service is the most appropriate?

Answer: B. AWS Server Migration Service.

- **Explanation:** The now-deprecated **AWS Server Migration Service (SMS)** was commonly used for automating the migration of thousands of on-premises virtual machines to AWS. The preferred modern service is **AWS Application Migration Service (AWS MGN)**, which superseded SMS.

13. What are some key benefits of using AWS CloudFormation? (Choose TWO)

Answer: C. It automates the provisioning and updating of your infrastructure in a safe and controlled manner. and D. It allows you to model your entire infrastructure in just a text file.

- **Explanation:**
 - **CloudFormation** allows you to use text-based templates (JSON/YAML) to **model your infrastructure (D)**.
 - It uses these templates to **automate provisioning and updates (C)**, ensuring resources are deployed consistently and safely.

14. Which of the following is a cloud computing deployment model that connects infrastructure and applications between cloud-based resources and existing resources not located in the cloud?

Answer: C. Hybrid.

- **Explanation:** A **Hybrid** cloud deployment model is an infrastructure environment that connects and links cloud-based resources (e.g., AWS) with on-premises resources (existing data centers).

15. A company is hosting business critical workloads in an AWS Region. To protect against data loss and ensure business continuity, a mirror image of the current AWS environment should be created in another AWS Region. Company policy requires that the standby environment must be available in minutes in case of an outage in the primary AWS Region. Which AWS service can be used to meet these requirements?

Answer: A. CloudEndure Disaster Recovery.

- **Explanation:** **CloudEndure Disaster Recovery** (now part of **AWS Elastic Disaster Recovery (DRS)**) provides continuous block-level replication to a low-cost staging area

in a separate AWS Region. In the event of an outage, the recovery environment can be launched within minutes, meeting the RTO requirement.

16. Which of the following S3 storage classes is most appropriate to host static assets for a popular e-commerce website with stable access patterns?

Answer: D. S3 Standard.

- **Explanation:** **Amazon S3 Standard** is designed for frequently accessed data, offering high durability, high availability, and low latency. It is the most appropriate choice for popular website assets with stable and frequent access patterns, as the price is optimized for retrieval frequency.

17. You want to create a backup of your data in another geographical location. Where should you create this backup?

Answer: B. In another Region.

- **Explanation:** To protect against a major disaster that could affect an entire AWS Region, backups for disaster recovery purposes should be stored in a separate, geographically distant **AWS Region**.

18. Which statement is true in relation to the security of Amazon EC2?

Answer: B. You should regularly patch the operating system and applications on your EC2 instances.

- **Explanation:** Under the Shared Responsibility Model (IaaS), the **customer is responsible** for the security *in* the cloud, which includes the operating system (OS) and application layers. This means the customer must **regularly patch** the OS and all installed applications.

19. What does AWS Cost Explorer provide to help manage your AWS spend?

Answer: D. Highly accurate cost forecasts for up to 12 months ahead.

- **Explanation:** **AWS Cost Explorer** is a visualization tool that not only analyzes historical costs but also provides **cost forecasts (D)**, allowing you to estimate your future spending trends.

20. Which of the following is a feature of Amazon RDS that performs automatic failover when the primary database fails to respond?

Answer: D. RDS Multi-AZ.

- **Explanation:** An **Amazon RDS Multi-AZ (Multiple Availability Zone)** deployment automatically creates a synchronous standby replica in a different AZ. If the primary database instance fails, RDS automatically fails over to the standby instance, ensuring high availability.

21. You are using several on-demand EC2 Instances to run your development environment. What is the best way to reduce your charges when these instances are not in use?

Answer: D. Stopping the instances.

- **Explanation:** When you **stop** an EC2 instance, you **retain the attached EBS volumes** and the configuration, but you **stop paying for the compute time**. Since EBS volumes still incur storage charges, this reduces the total charges without losing the data or the instance setup. Terminating (C) deletes the instance and typically the data.

22. Which of the following strategies helps protect your AWS root account?

Answer: A. Delete root user access keys if you do not need them.

- **Explanation:** AWS strongly recommends using the **root user only for tasks that require it** (like changing support plan or closing the account) and otherwise relying on IAM users. It is a best practice to delete the root user access keys (A) if you don't need programmatic access with the root user to eliminate a potential attack vector.

23. Which of the following are factors should be considered for Amazon EBS pricing? (Choose TWO)

Answer: A. The size of volumes provisioned per month. and C. The amount of data you have stored in snapshots.

- **Explanation:** Amazon EBS pricing is based on:
 - **Storage (A):** The total GB of volume storage you provision.
 - **Snapshots (C):** The GB of data stored in EBS snapshots in S3.
 - **I/O Requests (not an option here):** Depending on the volume type.

24. You have just set up your AWS environment and have created six IAM user accounts for the DevOps team. What is the AWS recommendation when granting permissions to these IAM accounts?

Answer: B. Apply the Principle of Least Privilege.

- **Explanation:** The **Principle of Least Privilege** dictates that you should only grant the minimum permissions required for a user or role to perform their job. This is the cornerstone of securing an AWS account.

25. Which of the following has the greatest impact on cost? (Choose TWO)

Answer: A. Compute charges. and D. Data Transfer Out charges.

- **Explanation:**

- **Compute charges (A)** (EC2, RDS, Lambda) are often the largest component of an AWS bill.
- **Data Transfer Out (D)** (transferring data *out* of AWS to the internet or across regions) is a metered, paid activity and can accumulate significant costs. Data Transfer In (C) is usually free.

26. Who from the following will get the largest discount?

Answer: D. A user who chooses to buy Reserved, Standard, All upfront instances.

- **Explanation:** The largest discount on Reserved Instances (RIs) is achieved by combining these factors:
 - **Reserved** (over On-demand).
 - **Standard** (over Convertible, as Standard RIs are less flexible but cheaper).
 - **All Upfront** (highest commitment, lowest price).

27. Which of the following is an available option when purchasing Amazon EC2 instances?

Answer: D. The ability to pay upfront to get lower hourly costs.

- **Explanation:** This describes **Reserved Instances (RIs)**, where you pay an upfront amount in exchange for a lower effective hourly rate over the 1- or 3-year term. Bidding to get the lowest possible prices (A) describes **Spot Instances**.

28. What does the term “Economies of scale” mean?

Answer: C. It means that AWS will continuously lower costs as it grows.

- **Explanation: Economies of scale** refers to the cost advantage that large businesses (like AWS) can gain by increasing production. As AWS grows, it can purchase hardware, power, and bandwidth in massive volumes, making its operations more efficient and allowing it to pass savings on to customers by continuously lowering prices.

29. A company experiences fluctuations in traffic patterns to their e-commerce website when running flash sales. What service can help the company dynamically match the required compute capacity to handle spikes in traffic during flash sales?

Answer: A. AWS Auto Scaling.

- **Explanation:** **AWS Auto Scaling** automatically adjusts the number of EC2 instances (or other resources) based on demand. This allows the company to rapidly scale up to meet the spike during a flash sale and scale back down afterward, dynamically matching capacity to traffic.

30. Which of the below options is true of Amazon VPC?

Answer: B. AWS Customers have complete control over their Amazon VPC virtual networking environment.

- **Explanation:** **Amazon Virtual Private Cloud (VPC)** allows you to provision a logically isolated section of the AWS Cloud where you can launch AWS resources in a virtual network that you define. Customers have **complete control** over the network settings, IP ranges, subnets, route tables, and network gateways.

31. Which tool can a non-AWS customer use to compare the cost of on-premises environment resources to AWS?

Answer: D. AWS TCO Calculator.

- **Explanation:** The **AWS Total Cost of Ownership (TCO) Calculator** is specifically designed for both AWS and non-AWS customers to compare the costs of running IT infrastructure on-premises versus on AWS.

32. Which of the following services provide real-time auditing for compliance and vulnerabilities? (Choose TWO)

Answer: A. AWS Config. and D. AWS Trusted Advisor.

- **Explanation:**
 - **AWS Config (A)** continuously monitors and records your AWS resource configurations and evaluates them against desired configurations for compliance and governance.
 - **AWS Trusted Advisor (D)** checks your environment against AWS best practices in five categories (Cost Optimization, Performance, Security, Fault Tolerance, Service Limits) and provides near real-time audit advice.

33. Which of the following AWS services uses Puppet to automate how EC2 instances are configured?

Answer: A. AWS OpsWorks.

- **Explanation:** **AWS OpsWorks** is a configuration management service that supports both **Chef and Puppet** automation platforms to automate the configuration and deployment of software on EC2 instances.

34. An organization uses a hybrid cloud architecture to run their business. Which AWS service enables them to deploy their applications to any AWS or on-premises server?

Answer: C. AWS CodeDeploy.

- **Explanation: AWS CodeDeploy** is a fully managed deployment service that automates software deployments to a variety of compute services, including Amazon EC2, AWS Fargate, AWS Lambda, and **servers running on-premises** (part of a hybrid environment).

35. Select the services that are server-based: (Choose TWO)

Answer: A. Amazon RDS. and E. Amazon EMR.

- **Explanation: Server-based** means the customer selects and pays for a specific instance/server size, even if AWS manages the software layer.
 - **Amazon RDS** requires you to select an instance size (server).
 - **Amazon EMR** requires you to provision a cluster of EC2 instances (servers).
 - DynamoDB and Lambda are serverless; Fargate abstracts the server but still bills for VCPU/memory, sometimes considered serverless compute or just serverless container orchestration.

36. What best describes penetration testing?

Answer: B. Testing your network to find security vulnerabilities that an attacker could exploit.

- **Explanation: Penetration testing** (or ethical hacking) is a simulated cyber attack against your computer system to check for exploitable security weaknesses. AWS has specific rules regarding when and how customers can perform this against their own instances and applications.

37. Which of the following are use cases for Amazon EMR? (Choose TWO)

Answer: C. Enables you to analyze and process extremely large amounts of data in a timely manner. and D. Enables you to easily run and scale Apache Spark, Hadoop, and other Big Data frameworks.

- **Explanation: Amazon EMR (Elastic MapReduce)** is a managed cluster platform that simplifies running big data frameworks like Apache Spark, Hadoop, HBase, Presto, and Flink to process and analyze massive amounts of data.

38. Your CTO has asked you to contact AWS support using the chat feature to ask for guidance related to EBS. However, when you open the AWS support center you can't see a way to contact support via Chat. What should you do?

Answer: C. At a minimum, upgrade to Business support plan.

- **Explanation:** Real-time communication methods like **Chat and Phone** are available starting with the **Business Support** plan. Developer support only offers 24x7 access via email.

39. A developer wants to quickly deploy and manage his application in the AWS Cloud, but he doesn't have any experience with cloud computing. Which of the following AWS services would help the developer achieve his goal?

Answer: D. AWS Elastic Beanstalk.

- **Explanation:** **AWS Elastic Beanstalk** is a Platform as a Service (PaaS) offering that automatically handles the complexity of environment provisioning, load balancing, and scaling, allowing a developer with minimal cloud experience to quickly deploy and manage their application.

40. Which statement best describes the AWS Pay-As-You-Go pricing model?

Answer: D. With AWS, you replace large capital expenses with low variable payments.

- **Explanation:** The **Pay-As-You-Go** model means you replace the **large Capital Expenses (CapEx)** of buying physical hardware with **low variable payments (OpEx)** for the exact resources you consume.

41. For Amazon RDS databases, what does AWS perform on your behalf? (Choose TWO)

Answer: A. Database setup. and C. Management of the operating system.

- **Explanation:** **Amazon RDS** is a managed database service. AWS handles the management of the underlying infrastructure, including:
 - **Database setup (A):** Installation of the database software.
 - **Management of the operating system (C):** Patching, security, and maintenance of the host OS.

42. Which of the following strategies help analyze costs in AWS?

Answer: A. Using tags to group resources.

- **Explanation: Tags** (key-value labels) are essential for cost analysis. By tagging resources with information like `Project:Alpha` or `Department:Finance`, you can use the Cost & Usage Report or Cost Explorer to group and analyze your spending by those specific categories.

43. A media company has an application that requires the transfer of large data sets to and from AWS every day. This data is business critical and should be transferred over a consistent connection. Which AWS service should the company use?

Answer: A. AWS Direct Connect.

- **Explanation: AWS Direct Connect** provides a dedicated, private network connection from your data center to AWS. This ensures a **consistent, high-bandwidth** connection, which is ideal for the frequent transfer of large, business-critical datasets.

44. What is the main benefit of the AWS Storage Gateway service?

Answer: C. It allows integration of on-premises IT environments with Cloud Storage.

- **Explanation: AWS Storage Gateway** is a hybrid service that provides file-based, volume-based, and tape-based storage interfaces on-premises, backed by cloud storage (S3 and EBS), effectively **integrating on-premises environments with AWS cloud storage**.

45. To protect against data loss, you need to backup your database regularly. What is the most cost-effective storage option that provides immediate retrieval of your backups?

Answer: B. Amazon S3 Standard-Infrequent Access.

- **Explanation: S3 Standard-IA** is designed for data that is less frequently accessed but requires rapid retrieval when needed (**immediate retrieval**). It is much more cost-effective than S3 Standard (D) for backups, while still being immediately accessible, unlike S3 Glacier (A, C), which has retrieval delays.

46. Which service can you use to route traffic to the endpoint that provides the best application performance for your users worldwide?

Answer: A. AWS Global Accelerator.

- **Explanation: AWS Global Accelerator** uses the highly available AWS global network backbone to direct user traffic to the optimal application endpoints (ALBs, EC2

instances) in the nearest AWS Region, significantly **improving application performance for global users**.

47. Why are Serverless Architectures more economical than Server-based Architectures?

Answer: B. With the Server-based Architectures, compute resources continue to run all the time but with serverless architecture, compute resources are only used when code is being executed.

- **Explanation:** The key cost advantage of serverless (like Lambda) is that you only pay for the time your code is actually running (execution time). In server-based architectures (like EC2), you pay for the instance capacity regardless of whether it's actively processing requests, leading to lower utilization and higher cost per effective unit of work.

48. Which of the below options are use cases of the Amazon Route 53 service? (Choose TWO)

Answer: C. DNS configuration and management. and D. Manages global application traffic through a variety of routing types.

- **Explanation: Amazon Route 53** is AWS's highly available and scalable cloud DNS web service.
 - It provides **DNS configuration and management (C)** (mapping domain names to IP addresses).
 - It also offers advanced routing policies (like Latency-based and Geo-location routing) to **manage global application traffic (D)**.

49. You want to transfer 200 Terabytes of data from on-premises locations to the AWS Cloud, which of the following can do the job in a cost-effective way?

Answer: D. AWS Snowball.

- **Explanation: AWS Snowball** is a physical device used for migrating data sets that are too large or too slow to transfer over the internet. 200 TB falls within the common capacity range of a Snowball device (80 TB or 100 TB versions), making it the most cost-effective and time-efficient option for this volume. Snowmobile (A) is for Exabytes of data.

50. You have a real-time IoT application that requires sub-millisecond latency. Which of the following services should you use?

Answer: D. Amazon ElastiCache for Redis.

- **Explanation: Amazon ElastiCache for Redis** is a highly popular in-memory data store used for caching and session management. In-memory data stores provide the fastest possible response times, typically with **sub-millisecond latency**, which is necessary for real-time applications like high-volume IoT systems.

Practice Exam 7: Answers and Explanations

1. Which of the following can help secure your sensitive data in Amazon S3? (Choose TWO)

Answer: C. Enable S3 Encryption. and D. Encrypt the data prior to uploading it.

- **Explanation:**
 - **Encrypt the data prior to uploading it (D)** (Client-Side Encryption) ensures the data is protected before it even reaches AWS.
 - **Enable S3 Encryption (C)** (Server-Side Encryption) ensures the data is encrypted once it is stored at rest in the S3 bucket. Both are essential layers of data protection.

2. Which AWS service helps developers compile and test their code?

Answer: D. AWS CodeBuild.

- **Explanation: AWS CodeBuild** is a fully managed build service that **compiles source code, runs unit tests**, and produces artifacts that are ready to deploy.

3. Which of the following will affect how much you are charged for storing objects in S3? (Choose TWO)

Answer: C. The storage class used for the objects stored. and E. The total size in gigabytes of all objects stored.

- **Explanation:**
 - **The total size (E)** (in GB) is the most obvious cost factor.
 - **The storage class (C)** (e.g., S3 Standard, S3 Standard-IA, S3 Glacier) determines the per-GB rate, as different classes are priced for different access patterns.

4. What does the Amazon CloudFront service provide? (Choose TWO)

Answer: B. Increases application availability by caching at the edge. and E. Delivers content to end users with low latency.

- **Explanation: Amazon CloudFront** is a Content Delivery Network (CDN) that uses a global network of **Edge Locations** to:
 - **Cache content (B)** closer to the end user, which improves availability by reducing load on origin servers.
 - **Deliver content to end users with low latency (E)** by serving the cached content from the closest Edge Location.

5. You are facing a lot of problems with your current contact center. Which service provides a cloud-based contact center that can deliver a better service for your customers?

Answer: B. Amazon Connect.

- **Explanation: Amazon Connect** is a self-service, cloud-based contact center service that makes it easy for any business to deliver better customer service at a lower cost.

6. You have migrated your application to AWS recently. How can you view the AWS costs applied to your account?

Answer: A. Using the AWS Cost & Usage Report.

- **Explanation: The AWS Cost & Usage Report (CUR)** is the most comprehensive source of cost and usage information for your AWS account, providing granular data that can be used for deep analysis. (AWS Billing Dashboard and Cost Explorer are also correct but CUR is the most comprehensive data source.)

7. Which of the following are valid Amazon EC2 Reserved Instance types? (Choose TWO)

Answer: A. Convertible. and E. Standard.

- **Explanation: The two types of EC2 Reserved Instances (RIs)** are:
 - **Standard RIs:** Offer the largest discount but cannot be changed after purchase.
 - **Convertible RIs:** Offer a slightly lower discount but provide the flexibility to change the instance family, OS, or tenancy over the term.

8. Which of the following services gives you access to all AWS auditor-issued reports and certifications?

Answer: A. AWS Artifact.

- **Explanation: AWS Artifact** is a self-service portal that provides customers with **on-demand access to AWS's compliance reports**, such as Service Organization Control (SOC) reports, Payment Card Industry (PCI) reports, and various certifications.

9. You manage a blog on AWS that has different environments: development, testing, and production. What can you use to create a custom console for each environment to view and manage your resources easily?

Answer: A. AWS Resource Groups.

- **Explanation: AWS Resource Groups** allow you to manage and automate tasks on groups of resources across different services, all tagged similarly (e.g., `Environment:Production`). You can create custom consoles (using the Resource Group console) for each group.

10. Which AWS service collects metrics from running EC2 instances?

Answer: B. Amazon CloudWatch.

- **Explanation: Amazon CloudWatch** is the monitoring and observability service that collects and tracks metrics, collects and monitors log files, and sets alarms, including default metrics for EC2 instances such as CPU utilization and network activity.

11. Your web application currently faces performance issues and suffers from long load times. Which of the following AWS services could help fix these issues and improve performance?

Answer: B. AWS X-Ray.

- **Explanation: AWS X-Ray** is a tracing service that helps developers analyze and debug production, distributed applications. It helps you understand where application bottlenecks are occurring (e.g., database calls, external HTTP calls, slow processing functions) so you can fix the underlying performance issues.

12. Which of the following compute resources are serverless? (Choose TWO)

Answer: B. AWS Fargate. and C. AWS Lambda.

- **Explanation:**
 - **AWS Lambda (C)** is a serverless function-as-a-service offering.
 - **AWS Fargate (B)** is serverless compute for containers (ECS/EKS).

13. For compliance and regulatory purposes, a government agency requires that their applications must run on hardware that is dedicated to them only. How can you meet this requirement?

Answer: A. Use EC2 Dedicated Hosts.

- **Explanation: EC2 Dedicated Hosts** are physical servers with EC2 instance capacity fully dedicated to your use. This option gives you visibility into the underlying physical sockets and cores, which is necessary to meet specific corporate, governmental, or software licensing compliance requirements.

14. Which AWS Cost Governance best practice recommends refining workloads regularly to make the most of existing AWS resources and reduce costs?

Answer: B. Architecture Optimization.

- **Explanation: Architecture Optimization** involves continuously reviewing and refining your cloud architecture (e.g., using right-sized instances, adopting serverless, optimizing database queries) to ensure it is efficient, scalable, and cost-effective.

15. An organization needs to build a financial application that requires support for ACID transactions. Which AWS database service is most appropriate in this case?

Answer: B. RDS.

- **Explanation: ACID (Atomicity, Consistency, Isolation, Durability)** transactions are the standard for relational databases. **Amazon RDS** (Relational Database Service) is the fully managed service for relational databases (like MySQL, PostgreSQL, Aurora), which inherently support ACID transactions.

16. What can you use to assign permissions directly to an IAM user?

Answer: D. IAM Policy.

- **Explanation: IAM Policies** are the documents (JSON files) that define permissions. To assign permissions to an IAM user, you must create or use an existing **IAM Policy** and attach it directly to the user (or to a group the user belongs to).

17. The owner of an E-Commerce application notices that the compute capacity requirements vary heavily from time to time. What makes AWS more economical than traditional data centers for this type of application?

Answer: C. AWS allows customers to launch and terminate EC2 instances based on demand.

- **Explanation:** This flexibility, known as **elasticity**, means customers only pay for the capacity they use (On-Demand pricing). In traditional data centers, capacity must be provisioned for peak load and sits idle most of the time.

18. Amazon RDS supports multiple database engines to choose from. Which of the following is not one of them?

Answer: D. Teradata.

- **Explanation:** Amazon RDS supports PostgreSQL, Oracle, Microsoft SQL Server, MySQL, MariaDB, and Amazon Aurora. **Teradata** is a different commercial data warehousing platform and is not a supported engine for Amazon RDS.

19. Which of the following AWS services would help you migrate on-premise databases to AWS?

Answer: A. AWS DMS.

- **Explanation: AWS Database Migration Service (DMS)** helps you migrate databases to AWS quickly and securely. It supports both homogeneous migrations (e.g., Oracle to Oracle) and heterogeneous migrations (e.g., Oracle to Amazon Aurora).

20. For new AWS customers, what is the EASIEST way to launch a simple WordPress website on AWS?

Answer: A. Run WordPress on an Amazon Lightsail instance.

- **Explanation: Amazon Lightsail** is designed to be the easiest way to launch and manage basic cloud resources. It offers pre-configured blueprints (including WordPress) on a simple, fixed-price virtual private server.

21. Which of the following would you use to manage your encryption keys in the AWS Cloud? (Choose TWO)

Answer: A. AWS KMS. and E. CloudHSM.

- **Explanation:**
 - **AWS Key Management Service (KMS) (A)** is a managed service that makes it easy to create and control the encryption keys used to encrypt your data.
 - **AWS CloudHSM (E)** provides hardware security modules (HSMs) in the AWS Cloud, allowing you to generate and use your own encryption keys for strong protection and compliance.

22. Which of the following services allows you to install and run custom relational database software?

Answer: A. Amazon EC2.

- **Explanation:** To install and run **custom** database software (or database software not supported by RDS), you must launch an **Amazon EC2** instance and then manually install, configure, patch, and manage the database yourself.

23. Your application requirements for CPU and RAM are changing in an unpredictable way. Which service can be used to dynamically adjust these resources based on load?

Answer: A. Auto Scaling.

- **Explanation:** **AWS Auto Scaling** can dynamically scale the *number* of EC2 instances up or down based on metrics like CPU utilization to handle load changes. (For serverless options, like Lambda, resources are adjusted automatically by AWS).

24. A company has infrastructure hosted in an on-premises data center. They currently have an operations team that takes care of identity management. If they decide to migrate to the AWS cloud, which of the following services would help them perform the same role in AWS?

Answer: A. AWS IAM.

- **Explanation:** **AWS Identity and Access Management (IAM)** is the foundational AWS service for securely controlling access to AWS resources. It allows the operations team to define users, groups, and permissions, fulfilling the role of identity management in the cloud.

25. What are some key design principles for designing public cloud systems? (Choose TWO)

Answer: B. Loose coupling over tight coupling. and D. Disposable resources instead of fixed servers.

- **Explanation:**
 - **Loose coupling (B)** (decoupling components) is a primary principle for building fault-tolerant and highly available systems.
 - **Disposable resources (D)** (treating servers as temporary, scalable units) is a key aspect of cloud elasticity and modern infrastructure management.

26. Where can AWS account owners get a list of all users in their account, including the status of their AWS credentials?

Answer: B. IAM Credential Report.

- **Explanation:** The **IAM Credential Report** is a downloadable report (in CSV format) that lists all users in the account and the status of their various credentials, including passwords, access keys, and MFA status.

27. Which of the following services enables you to easily generate and use your own encryption keys in the AWS Cloud?

Answer: C. AWS CloudHSM.

- **Explanation:** **AWS CloudHSM** is a cloud-based hardware security module (HSM) that allows you to manage and use your own encryption keys, meeting stringent security and regulatory requirements.

28. You have developed a web application targeting a global audience. Which of the following will help you achieve the highest redundancy and fault tolerance from an infrastructure perspective?

Answer: D. Deploy the application in multiple Availability Zones in multiple AWS regions.

- **Explanation:** For the **highest** level of redundancy, you must protect against failure at the server level, AZ level, and Region level. Deploying across **multiple AZs** (fault tolerance within a region) and **multiple Regions** (protection against regional failure) provides the best overall resilience.

29. For some services, AWS automatically replicates data across multiple Availability Zones to provide fault tolerance in the event of a server failure or Availability Zone outage. Select TWO services that automatically replicate data across Availability Zones.

Answer: B. S3. and C. DynamoDB.

- **Explanation:**
 - **Amazon S3 (B)** automatically stores data redundantly across multiple Availability Zones within a region.
 - **Amazon DynamoDB (C)** automatically spreads data and traffic for your tables across multiple AZs within a region.

30. Which of the following factors affect Amazon CloudFront cost? (Choose TWO)

Answer: A. Number of Requests. and B. Traffic Distribution.

- **Explanation:**

- **Traffic Distribution (B):** Content delivery charges vary by the geographic region where the content is delivered (Edge Location).
- **Number of Requests (A):** The total number of HTTP/HTTPS requests processed by CloudFront is a direct billing factor.

31. Which of the following resources can an AWS customer use to learn more about prohibited uses of the services offered by AWS?

Answer: D. AWS Acceptable Use Policy.

- **Explanation:** The **AWS Acceptable Use Policy** explicitly outlines actions and content that are prohibited when using AWS services, such as illegal activities or security violations.

32. Which of the following security resources are available to any user for free? (Choose TWO)

Answer: A. AWS Bulletins. and D. AWS Security Blog.

- **Explanation:** **AWS Bulletins** and the **AWS Security Blog** are publicly available resources that provide information on security and compliance, best practices, and updates, accessible to all users without a paid support plan.

33. How can you protect data stored on Amazon S3 from accidental deletion?

Answer: A. By enabling S3 Versioning.

- **Explanation:** **S3 Versioning** keeps multiple versions of an object in the same bucket. If an object is accidentally deleted or overwritten, you can easily restore a previous version, effectively protecting against accidental deletion.

34. Which of the following is the responsibility of AWS according to the AWS Shared Responsibility Model?

Answer: A. Securing regions and edge locations.

- **Explanation:** AWS is responsible for **Security of the Cloud**, which includes the physical infrastructure, network, and foundation services. This specifically includes **securing the physical data centers** that comprise Regions and Edge Locations.

35. Which of the following AWS support plans provides access to only the seven core AWS Trusted Advisor checks?

Answer: B. Basic & Developer Support.

- **Explanation:** The **Basic** and **Developer** support plans provide access to the **seven core** Trusted Advisor checks. The Business and Enterprise plans provide access to the full set of checks.

36. Which of the following is NOT a benefit of using AWS Lambda?

Answer: B. AWS Lambda provides resizable compute capacity in the cloud.

- **Explanation:** While Lambda provides capacity, the phrase "resizable compute capacity" generally refers to traditional servers (like EC2) that can be resized vertically. Lambda is **serverless** and abstracts capacity management entirely; you do not reserve or explicitly resize the underlying compute resources.

37. How does AWS help customers achieve compliance in the cloud?

Answer: C. AWS has many common assurance certifications such as ISO 9001 and HIPAA.

- **Explanation:** AWS maintains numerous global and regional compliance certifications (like ISO 9001, SOC, HIPAA, FedRAMP). By inheriting these certifications for the **Security of the Cloud**, customers are given a significant head start in meeting their own compliance requirements.

38. Who is responsible for scaling a DynamoDB database in the AWS Shared Responsibility Model?

Answer: C. AWS.

- **Explanation:** **Amazon DynamoDB** is a fully managed, serverless database. As part of its managed service offering, **AWS** is responsible for all scaling, patching, and maintenance of the underlying infrastructure.

39. You are working as a web app developer. You are currently facing issues in media playback for mobile devices because your media format is not supported. Which of the following AWS services can help you convert your media into another format?

Answer: A. Amazon Elastic Transcoder.

- **Explanation:** **Amazon Elastic Transcoder** is a media transcoding service in the cloud that converts media files from their source format into versions that will play back on devices like smartphones, tablets, and PCs.

40. What are the benefits of the AWS Organizations service? (Choose TWO)

Answer: C. Manage your organization's payment methods. and E. Consolidate billing across multiple AWS accounts.

- **Explanation:**

- **AWS Organizations** helps you centrally **manage billing (E)** and payments for multiple AWS accounts using the consolidated billing feature.
- It also allows for central management of access, policies, and **payment methods (C)** across the organization.

41. Which AWS service allows you to build a data warehouse in the cloud?

Answer: B. Amazon Redshift.

- **Explanation: Amazon Redshift** is a fully managed, petabyte-scale cloud data warehouse service designed for complex analytical queries against structured data, making it the primary choice for data warehousing on AWS.

42. What AWS service allows you to buy third-party software solutions and services that run on AWS resources?

Answer: C. AWS Marketplace.

- **Explanation: AWS Marketplace** is a digital catalog with thousands of software listings from independent software vendors, allowing customers to easily find, buy, and deploy software solutions and services that run on AWS.

43. Which of the following services is an AWS repository management system that allows for storing, versioning, and managing your application code?

Answer: B. AWS CodeCommit.

- **Explanation: AWS CodeCommit** is a fully managed source control service that hosts secure, highly scalable, private Git repositories, which are used for storing, versioning, and managing application code.

44. Which AWS service can be used to route end users to the nearest AWS Region to reduce latency?

Answer: D. Amazon Route 53.

- **Explanation: Amazon Route 53** can use **Latency-Based Routing** to route users to the AWS Region that provides the lowest latency, thereby improving the user experience.

45. Which feature enables users to sign into their AWS accounts with their existing corporate credentials?

Answer: A. Federation.

- **Explanation: Federation** (typically using IAM Roles and services like AWS Single Sign-On or a third-party identity provider) enables users to access their AWS accounts using credentials managed by an existing corporate identity system (e.g., Active Directory or SAML).

46. According to the AWS shared responsibility model, what are the controls that customers fully inherit from AWS? (Choose TWO)

Answer: C. Data center security controls. and D. Environmental controls.

- **Explanation:** The customer **fully inherits** all controls related to the physical facilities and underlying infrastructure, as these are entirely managed by AWS (**Security of the Cloud**):
 - **Data center security controls (C):** Physical access, network security.
 - **Environmental controls (D):** HVAC, power, fire suppression.

47. What can you access by visiting the URL: <http://status.aws.amazon.com>?

Answer: C. AWS Service Health Dashboard.

- **Explanation:** The **AWS Service Health Dashboard** provides a public, real-time view of the health status of all core AWS services across all global regions.

48. Which of the following procedures can reduce latency when your end users are retrieving data? (Choose TWO)

Answer: A. Store media assets in the region closest to your end users. and E. Store media assets in S3 and use CloudFront to distribute these assets.

- **Explanation:**
 - **Using CloudFront (E)** is the best way to reduce latency globally by caching content at edge locations close to users.
 - **Storing assets in the region closest to your users (A)** minimizes the distance the data must travel from the origin server to the user.

49. Which of the following are part of the seven design principles for security in the cloud? (Choose TWO)

Answer: B. Use IAM roles to grant temporary access instead of long-term credentials. and D. Enable real-time traceability.

- **Explanation:** The security design principles include:
 - **Enable traceability (D):** Using services like CloudTrail to monitor and log actions.
 - **Automate security best practices:** Which includes using **IAM roles for temporary access (B)** instead of permanent access keys.

50. A company is migrating production workloads to AWS, and they are concerned about cost management across different departments. Which option should the company implement to categorize and track AWS spending?

Answer: C. Apply cost allocation tags to segment AWS costs by different e projects and departments.

- **Explanation:** **Cost allocation tags** are key-value labels you apply to resources (e.g., `Department:Marketing`). AWS uses these tags to organize your costs on the Cost and Usage Report, making it easy to categorize and track spending per department.

Practice Exam 8: Answers and Explanations 📖

General Questions

1. What is the main benefit of attaching security groups to an Amazon RDS instance?

Answer: B. Controls what IP address ranges can connect to your database instance.

- **Explanation:** A **Security Group** acts as a virtual firewall for your instance (EC2, RDS, etc.), controlling both inbound and outbound traffic at the instance level. For an RDS instance, its primary use is to define the source IP ranges or other security groups that are allowed to connect to the database port.

2. A company wants to use Amazon Elastic Container Service (Amazon ECS) to run its containerized applications. For compliance reasons, the company wants to retain complete visibility and control over the underlying server cluster. Which Amazon ECS launch type will satisfy these requirements?

Answer: A. EC2 launch type.

- **Explanation:** The **EC2 launch type** requires the customer to provision and manage the EC2 instances (servers) that the containers run on. This provides the customer with **complete visibility and control** over the underlying host operating system and server cluster, satisfying the compliance requirement. **Fargate** is serverless and abstracts away the underlying servers.

3. You have multiple standalone AWS accounts and you want to decrease your AWS monthly charges. What should you do?

Answer: B. Add the accounts to an AWS Organization and use Consolidated Billing.

- **Explanation:** **Consolidated Billing**, a feature of **AWS Organizations**, combines the usage from all accounts, which allows you to benefit from volume discounts and **Savings Plans/Reserved Instances** across the entire organization, resulting in lower overall monthly charges.

4. You have been tasked with auditing the security of your VPC. As part of this process, you need to start by analyzing what inbound and outbound traffic is allowed on your EC2 instances. What two parts of the VPC do you need to check to accomplish this task?

Answer: D. Security Groups and Network ACLs.

- **Explanation:** To determine what traffic is allowed to an EC2 instance, you must check both layers of security:
 - **Security Groups (SG):** Act as a stateful firewall at the **instance level**.
 - **Network Access Control Lists (NACLs):** Act as a stateless firewall at the **subnet level**.

5. What does the AWS "Business" support plan provide? (Choose TWO)

Answer: A. Access to the full set of Trusted Advisor checks. and D. AWS Support API.

- **Explanation:** The **Business Support Plan** includes access to the **full suite of Trusted Advisor checks (A)** and programmatic access to support cases via the **AWS Support API (D)**. Support Concierge and Proactive Technical Account Management (TAM) are part of the Enterprise Support plan.

6. You have just finished writing your application code. Which service can be used to automate the deployment and scaling of your application?

Answer: B. AWS Elastic Beanstalk.

- **Explanation:** **AWS Elastic Beanstalk** is a Platform as a Service (PaaS) offering that takes your application code and automatically handles the deployment, provisioning, load balancing, **scaling**, and health monitoring of the underlying infrastructure.

7. Which statement is true in relation to security in AWS?

Answer: B. AWS customers are responsible for patching any database software running on Amazon EC2.

- **Explanation:** Under the **Shared Responsibility Model**, when running software on an **EC2** instance (IaaS), the **customer** is responsible for the security *in* the Cloud, which includes managing and **patching the guest operating system and any installed software**, such as database software.

8. Amazon EC2 instances are conceptually very similar to traditional servers. However, using Amazon EC2 server instances in the same manner as traditional hardware server instances is only a starting point. What are the main benefits of using the AWS EC2 instances instead of traditional servers? (Choose TWO)

Answer: A. Improves Fault-Tolerance. and E. Can be scaled manually in a shorter period of time.

- **Explanation:**
 - **Fault Tolerance (A)** is improved by easily deploying multiple, inexpensive EC2 instances across different Availability Zones.
 - **Scaling (E)** is fast because EC2 instances can be launched and configured rapidly, allowing manual or automatic scale-out much faster than provisioning physical hardware.

9. Which statement is true regarding AWS pricing? (Choose TWO)

Answer: A. With the AWS pay-as-you-go pricing model, you don't have to pay any upfront fee. and C. You only pay for the individual services that you need with no long-term contracts.

- **Explanation:**
 - The **Pay-As-You-Go** model means there are generally **no required upfront fees (A)** (though optional upfront payments exist for discounts).
 - You are charged only for the services you consume, with **no mandatory long-term contracts (C)**.

10. Which AWS service provides the EASIEST way to set up and manage a secure, well-architected, multi-account AWS environment?

Answer: A. AWS Control Tower.

- **Explanation:** **AWS Control Tower** automates the setup of a landing zone—a secure, well-architected, multi-account AWS environment—using best practices. It's the easiest way to govern and set up a new multi-account structure.

11. A company is running a large web application that needs to always be available. The application tends to slow down when CPU usage is greater than 60%. How can they track when CPU usage goes above 60% for any of the EC2 Instances in their account?

Answer: C. Use CloudWatch Alarms to monitor the CPU and alert when the CPU usage is >= 60%.

- **Explanation:** **Amazon CloudWatch** is the monitoring service. A **CloudWatch Alarm** can be created based on an EC2 metric (like CPU Utilization) to trigger an action (such as sending a notification via SNS or triggering an Auto Scaling action) when a threshold (like 60%) is breached.

12. What is the recommended storage option when hosting an often-changing database on an Amazon EC2 instance?

Answer: A. Amazon EBS.

- **Explanation:** **Amazon Elastic Block Store (EBS)** provides persistent, high-performance block storage volumes that are attached to an EC2 instance. This is the standard, reliable, and durable choice for hosting operating systems and databases where data changes frequently.

13. You are working as a site reliability engineer (SRE) in an AWS environment, which of the following services helps monitor your applications?

Answer: A. Amazon CloudWatch.

- **Explanation:** **Amazon CloudWatch** is the core monitoring and observability service that SREs and Operations teams use to track metrics, logs, and set alarms for their applications and infrastructure.

14. What factors determine how you are charged when using AWS Lambda? (Choose TWO)

Answer: B. Number of requests to your functions. and E. Compute time consumed.

- **Explanation:** AWS Lambda pricing is based on two main factors:
 - **The number of requests (B)** (invocations).
 - **The duration (E)**, which is the time your code runs (measured in milliseconds) multiplied by the amount of memory allocated to the function.

15. What are the main differences between an IAM user and an IAM role in AWS? (Choose TWO)

Answer: A. An IAM user is uniquely associated with only one person, however a role is intended to be assumable by anyone who needs it. and B. An IAM user has permanent credentials associated with it, however a role has temporary credentials associated with it.

- **Explanation:**
 - **IAM Users (A)** are entities with permanent, long-term credentials (password, access keys) and are typically mapped to a single person.
 - **IAM Roles (A, B)** are identities that grant temporary permissions via **temporary credentials** when they are assumed by an entity (user, service, or application).

16. Which of the following actions may reduce Amazon EBS costs? (Choose TWO)

Answer: C. Deleting unnecessary snapshots. and D. Changing the type of the volume.

- **Explanation:**
 - **Snapshots (C)** are backups of your EBS volumes and incur storage costs. Deleting old, unnecessary snapshots reduces cost.
 - **Changing the volume type (D)** (e.g., from an expensive Provisioned IOPS SSD to a cheaper General Purpose SSD) can significantly reduce the monthly per-GB charge.

17. What does Amazon GuardDuty do to protect AWS accounts and workloads?

Answer: B. Continuously monitors AWS infrastructure and helps detect threats such as attacker reconnaissance or account compromise.

- **Explanation: Amazon GuardDuty** is an intelligent **threat detection** service that continuously monitors activity (VPC Flow Logs, CloudTrail events, DNS logs) to identify security threats, such as unusual API calls, compromised EC2 instances, or cryptocurrency mining activities.

18. Which database service should you use if your application and data schema require "joins" or complex transactions?

Answer: A. Amazon RDS.

- **Explanation:** Complex transactions, which require **ACID compliance** and support for relational operations like **joins**, are the domain of **Relational Databases**. **Amazon RDS** is the managed service for relational database engines (like PostgreSQL, MySQL, Aurora). DynamoDB (D) is a NoSQL service that does not support complex joins.

19. Which of the following makes it easier for you to categorize, manage and filter your resources?

Answer: D. AWS Tagging.

- **Explanation: AWS Tags** are key-value pairs that you define and attach to AWS resources. They are used for resource categorization (e.g., by Project, Environment, or Department), cost allocation, management, and filtering.

20. What should you consider when storing data in Amazon Glacier?

Answer: C. Amazon Glacier does not provide immediate retrieval of data.

- **Explanation: Amazon S3 Glacier** (now part of S3 Deep Archive/Glacier Flexible Retrieval) is designed for long-term archiving where data access is infrequent. Retrieval typically takes minutes to hours, meaning it **does not provide immediate retrieval (C)**, which is a major design consideration.

21. Engineers are wasting a lot of time and effort managing batch computing software in traditional data centers. Which of the following AWS services allows them to easily run thousands of batch computing jobs?

Answer: B. AWS Batch.

- **Explanation: AWS Batch** is a fully managed service that efficiently runs hundreds of thousands of computing batch jobs. It dynamically provisions the necessary compute resources (EC2 instances) and optimizes workload distribution, eliminating the need for engineers to manage batch computing software.

22. How can you increase your application's fault-tolerance while it is being hosted in AWS?

Answer: B. Deploy your application across multiple Availability Zones.

- **Explanation: Fault tolerance** is the ability of a system to continue operating despite the failure of some of its components. By deploying across **multiple Availability Zones (AZs)**, your application is protected from the failure of a single data center (AZ outage).

23. Which of the following AWS Support Plans gives you 24/7 access to Cloud Support Engineers via email & phone? (Choose TWO)

Answer: C. Enterprise. and E. Business.

- **Explanation:** Both the **Business** and **Enterprise** support plans offer 24x7 access to Cloud Support Engineers via **phone, chat, and email**. Developer support only offers 24x7 access via email.

24. Which of the following requires an access key ID and a secret access key to get long-lived programmatic access to AWS resources? (Choose TWO)

Answer: B. IAM user. and D. AWS account root user.

- **Explanation:**
 - **IAM Users (B)** are designed to have **long-lived** Access Key IDs and Secret Access Keys for programmatic access.
 - The **AWS account root user (D)** also has permanent access keys (though it is a best practice to delete them after initial setup).
 - IAM Roles (C) use **temporary** security credentials.

25. Which of the following is a benefit of the "Loose Coupling" architecture principle?

Answer: D. It allows individual application components or services to be modified without affecting other components.

- **Explanation: Loose Coupling** means that components (e.g., microservices, database, queue) are minimally dependent on each other. This modularity allows one component to be upgraded, modified, or replaced **without requiring changes or downtime in other components (D)**, increasing agility and fault tolerance.

26. A company needs to host a big data application on AWS using EC2 instances. Which of the following AWS Storage services would they choose to automatically get high throughput to multiple compute nodes?

Answer: C. Amazon Elastic File System.

- **Explanation: Amazon Elastic File System (EFS)** is a scalable file storage service that provides **shared access** (simultaneous access from multiple EC2 instances) with high throughput, making it ideal for large-scale, distributed applications like big data or shared web content. EBS (A) can only be attached to a single EC2 instance at a time.

27. Which of the following Cloud Computing deployment models eliminates the need to run and maintain physical data centers?

Answer: D. Cloud.

- **Explanation:** The **Cloud** deployment model (sometimes called Public Cloud) involves running all applications entirely on a cloud provider like AWS, completely **eliminating the need to manage and maintain physical data centers**.

28. What are the benefits of the AWS Marketplace service? (Choose TWO)

Answer: A. Protects customers by performing periodic security checks on listed products. and D. Provides flexible pricing options that suit most customer needs.

- **Explanation:**
 - **AWS Marketplace** helps ensure security by performing **periodic security checks (A)** on software listed by third-party sellers.
 - It offers **flexible pricing (D)**, including options like hourly billing, annual subscriptions, and free trials.

29. What is the benefit of Amazon EBS volumes being automatically replicated within the same availability zone?

Answer: B. Durability.

- **Explanation:** EBS volumes are replicated within their Availability Zone (AZ) to protect against component failure. This internal redundancy ensures **durability** and high availability of the data stored on the volume.

30. You are planning to launch an advertising campaign over the coming weekend to promote a new digital product. It is expected that there will be heavy spikes in load during the campaign period, and you can't afford any downtime. You need additional compute resources to handle the additional load. What is the most cost-effective EC2 instance purchasing option for this job?

Answer: D. On-Demand Instances.

- **Explanation:**
 - The workload is **temporary** (only for the campaign) and **cannot afford any downtime** (cannot be interrupted).
 - **On-Demand Instances** are the best fit because they provide capacity without a long-term commitment and are not subject to interruption, making them the most cost-effective *non-interruptible* solution for short-term, temporary capacity needs. Reserved Instances/Savings Plans (C, A) are for sustained workloads, and Spot Instances (B) can be interrupted.

31. Which of the following AWS services integrates with AWS Shield and AWS Web Application Firewall (AWS WAF) to protect against network and application layer DDoS attacks?

Answer: D. Amazon CloudFront.

- **Explanation:** **Amazon CloudFront** integrates with **AWS Shield** (DDoS protection) and **AWS WAF** (application firewall) at its edge locations. By placing your web application traffic behind CloudFront, you gain the benefit of these global security services to protect against network (L3/L4) and application layer (L7) attacks.

32. Which of the following services is used when encrypting EBS volumes?

Answer: B. AWS KMS.

- **Explanation:** **AWS Key Management Service (KMS)** is used to manage the encryption keys utilized for encrypting various AWS services, including **Amazon EBS volumes**, S3 objects, and RDS databases.

33. The AWS account administrator of your company has been fired. With the permissions granted to him as an administrator, he was able to create multiple IAM user accounts and access keys. Additionally, you are not sure whether he has access to the AWS root account or not. What should you do immediately to protect your AWS infrastructure? (Choose TWO)

Answer: D. Rotate all access keys. and E. Change the email address and password of the root user account and enable MFA.

- **Explanation:** This is a critical security incident:
 - The **root account (E)** is the most powerful. Immediately secure it by changing the credentials (password/email) and enabling/re-enabling **MFA**.
 - The administrator's old **access keys (D)** and any access keys they created for other IAM users should be immediately **rotated (deleted and replaced)** to revoke any long-lived programmatic access they might still have.

34. What is the Amazon ElastiCache service used for? (Choose TWO)

Answer: A. Provide an in-memory data storage service. and C. Improve web application performance.

- **Explanation:**
 - **Amazon ElastiCache** is a managed, distributed, **in-memory data store (A)** and caching service (supporting Redis and Memcached).

- By serving frequently accessed data from the high-speed cache, it dramatically **improves application performance (C)** and reduces the load on backend databases.

35. The elasticity of the AWS Cloud enables customers to save costs when compared to traditional hosting providers. What can AWS customers do to benefit from the elasticity of the AWS Cloud? (Choose TWO)

Answer: B. Use Amazon EC2 Auto Scaling. and E. Use Serverless Computing whenever possible.

- **Explanation: Elasticity** means seamlessly scaling capacity up and down as needed.
 - **Auto Scaling (B)** automatically adds and removes EC2 instances based on demand, eliminating the need to pay for idle capacity.
 - **Serverless Computing (E)** (like Lambda/DynamoDB) provides inherent elasticity and only charges for the exact compute consumed.

36. What are some of the benefits of using On-Demand EC2 instances? (Choose TWO)

Answer: C. They remove the need to buy “safety net” capacity to handle periodic traffic spikes. and E. You can increase or decrease your compute capacity depending on the demands of your application.

- **Explanation:**
 - **Elasticity (E):** On-Demand lets you launch (increase) or stop/terminate (decrease) capacity instantly.
 - **No upfront commitment (C):** You don't need to buy extra, unused capacity upfront (the "safety net") to handle unexpected spikes. You simply launch what you need when you need it.

37. Each AWS Region is composed of multiple Availability Zones. Which of the following best describes what an Availability Zone is?

Answer: D. It is a distinct location within a region that is insulated from failures in other Availability Zones.

- **Explanation: An Availability Zone (AZ)** is one or more discrete data centers within an AWS Region. They are designed to be physically separated and isolated from failures in other AZs (power, cooling, network, flood, etc.) to enable highly available architectures.

38. AWS provides disaster recovery capability by allowing customers to deploy infrastructure into multiple [...].

Answer: A. Regions.

- **Explanation:** While deployment in multiple Availability Zones protects against local failure, true **Disaster Recovery (DR)** capability requires deploying infrastructure into separate, geographically distant **AWS Regions** to protect against large-scale regional disasters.

39. A financial services company decides to migrate one of its applications to AWS. The application deals with sensitive data, such as credit card information, and must run on a PCI-compliant environment. Which of the following is the company's responsibility when building a PCI-compliant environment in AWS? (Choose TWO)

Answer: B. Ensure that AWS services are configured properly to meet all PCI DSS standards. and C. Restrict any access to cardholder data and create a policy that addresses information security for all personnel.

- **Explanation:** Under the Shared Responsibility Model:
 - AWS services are PCI DSS **compliant** (Security of the Cloud), but the customer must **configure them correctly (B)** (Security in the Cloud).
 - **Customer responsibility (C)** includes implementing controls like access restrictions, corporate policies, and data handling procedures required by PCI DSS.

40. What is the maximum amount of data that can be stored in S3 in a single AWS account?

Answer: B. Virtually unlimited storage.

- **Explanation: Amazon S3** is designed to provide **virtually unlimited storage** capacity. There is no hard limit on the total volume of data a customer can store.

41. Which pillar of the AWS Well-Architected Framework provides recommendations to help customers select the right compute resources based on workload requirements?

Answer: C. Performance Efficiency.

- **Explanation:** The **Performance Efficiency** pillar focuses on using IT and computing resources efficiently, which includes selecting the right resource type (e.g., EC2 instance type, Lambda function memory) and size for the workload.

42. Which AWS service delivers data, videos, applications, and APIs to users globally with low latency and high transfer speeds?

Answer: C. Amazon CloudFront.

- **Explanation:** **Amazon CloudFront** is the global Content Delivery Network (CDN) service that caches content at **Edge Locations** around the world, specifically designed to deliver content with **low latency** and high speeds.

43. Which of the following steps should be taken by a customer when conducting penetration testing on AWS?

Answer: D. Request and wait for approval from AWS support, and then conduct testing.

- **Explanation:** While AWS allows penetration testing against a customer's own EC2 instances and applications, the customer must first **request and receive approval from AWS** to ensure the testing does not inadvertently impact the AWS infrastructure or other customers.

44. Which AWS Cost Management tool allows you to view the most granular data about your AWS bill?

Answer: C. AWS Cost and Usage report.

- **Explanation:** The **AWS Cost and Usage Report (CUR)** is the most detailed source of cost information, providing line-item entries for every charge, allowing for the most **granular** analysis.

45. Which element of the AWS global infrastructure consists of one or more discrete data centers each with redundant power networking and connectivity which are housed in separate facilities?

Answer: B. Availability Zones.

- **Explanation:** This definition precisely describes an **Availability Zone (AZ)**. An AZ consists of one or more data centers, each with independent and redundant infrastructure, housed in separate facilities.

46. How many Availability Zones should compute resources be provisioned across to achieve high availability?

Answer: B. A minimum of two.

- **Explanation:** **High Availability** is generally achieved by eliminating single points of failure. If an application is deployed in only one AZ, an outage in that AZ brings down the entire application. Deploying across **a minimum of two (or more) AZs** ensures that the application remains available if one AZ fails.

47. The AWS Cloud's multiple Regions are an example of:

Answer: B. Global infrastructure.

- **Explanation:** AWS **Regions** and Availability Zones are the primary components of the **AWS Global Infrastructure**. Regions provide separate geographic areas for deploying infrastructure to serve a global user base.

48. Which AWS service can be used to manually launch instances based on resource requirements?

Answer: C. Amazon EC2.

- **Explanation:** **Amazon Elastic Compute Cloud (EC2)** provides secure, resizable compute capacity in the cloud. It is the service used to manually provision and launch virtual servers (instances).

49. Which is a recommended pattern for designing a highly available architecture on AWS?

Answer: C. Ensure that the application is designed to accommodate failure of any single component.

- **Explanation:** The recommended pattern for **Highly Available** and resilient architecture is to design for **failure**, meaning components must be loosely coupled and deployed redundantly (e.g., across multiple AZs) so that the application can **accommodate the failure of any single component** without user impact.

50. Which AWS characteristics make AWS cost effective for a workload with dynamic user demand? (Select TWO)

Answer: C. Elasticity. and D. Pay-as-you-go pricing.

- **Explanation:**
 - **Dynamic user demand** requires the system to scale capacity up and down, which is achieved through **Elasticity (C)**.
 - The **Pay-as-you-go pricing (D)** model ensures the customer only pays for the capacity they actually consume during peaks, and nothing during troughs, making it cost-effective.

Practice Exam 9: Answers and Explanations

General Questions

1. An administrator needs to rapidly deploy a popular IT solution and start using it immediately. Where can the administrator find assistance?

Answer: D. AWS Quick Start reference deployments.

- **Explanation:** **AWS Quick Starts** are automated, golden-standard reference deployments built by AWS and partners. They use CloudFormation templates to rapidly deploy fully functional, production-ready enterprise workloads (like SAP, Microsoft, or common open source stacks) in about an hour.

2. What is one of the advantages of the Amazon Relational Database Service (Amazon RDS)?

Answer: A. It simplifies relational database administration tasks.

- **Explanation:** Amazon RDS is a **managed service**. AWS handles tedious and time-consuming tasks like database setup, patching, backups, and recovery, which significantly **simplifies database administration (A)** for the customer.

3. Which of the following AWS Cloud services can be used to run a customer-managed relational database?

Answer: A. Amazon EC2.

- **Explanation:** To run a **customer-managed** relational database (where the customer is responsible for the OS, patching, and database software), the customer must provision an **Amazon EC2** instance and install the database software themselves.

4. A user is planning to launch two additional Amazon EC2 instances to increase availability. Which action should the user take?

Answer: A. Launch the instances across multiple Availability Zones in a single AWS Region.

- **Explanation:** **High Availability** is achieved by distributing resources across independent failure domains. **Availability Zones (AZs)** are independent failure

domains, so launching instances across **multiple AZs** ensures that if one AZ fails, the application remains available.

5. Which of the following can limit Amazon Simple Storage Service (Amazon S3) bucket access to specific users?

Answer: C. AWS Identity and Access Management (IAM) policies.

- **Explanation: IAM policies** (either attached to IAM users/roles or as S3 Bucket Policies) define who has access to an S3 bucket and what actions they can perform (e.g., read, write, delete).

6. Which AWS service allows companies to connect an Amazon VPC to an on-premises data center? (Select TWO)

Answer: A. AWS VPN. and D. Amazon Direct Connect.

- **Explanation:** Both services provide connectivity between a VPC and an on-premises data center:
 - **AWS VPN (A):** Creates an encrypted connection over the public internet (IPsec VPN).
 - **AWS Direct Connect (D):** Creates a dedicated, private connection.

7. Which AWS service or feature can be used to monitor CPU usage?

Answer: C. Amazon CloudWatch.

- **Explanation: Amazon CloudWatch** is the monitoring service that collects and tracks metrics from AWS resources, including default metrics like **CPU usage** for EC2 instances.

8. Which task is AWS responsible for in the shared responsibility model for security and compliance?

Answer: C. Updating Amazon EC2 host firmware.

- **Explanation:** AWS is responsible for the **Security of the Cloud**, which includes the infrastructure layer. The infrastructure layer includes the host hardware (the physical server running the hypervisor), and thus, **updating the host firmware (C)** is an AWS responsibility.

9. Which of the following security-related actions are available at no cost?

Answer: C. Accessing forums, blogs, and whitepapers.

- **Explanation:** Publicly available resources like the AWS documentation, **forums, blogs, and security whitepapers** (including the Well-Architected Framework) are always accessible to anyone at **no cost**.

10. Which storage service can be used as a low-cost option for hosting static websites?

Answer: D. Amazon Simple Storage Service (Amazon S3).

- **Explanation:** **Amazon S3** is widely used and highly recommended for hosting static websites. It's a reliable, scalable, and **low-cost** option that supports serving static HTML, CSS, JavaScript, and image files directly.

11. According to the AWS shared responsibility model what is the sole responsibility of AWS?

Answer: B. Edge location management.

- **Explanation:** AWS is solely responsible for the physical security and infrastructure of the **AWS Global Infrastructure**, which includes the management and security of the **Edge Locations** (part of Security of the Cloud).

12. Which of the following are pillars of the AWS Well-Architected Framework? (Select TWO)

Answer: B. Performance efficiency. and C. Security.

- **Explanation:** The five pillars of the AWS Well-Architected Framework are: Operational Excellence, **Security, Reliability, Performance Efficiency**, and Cost Optimization.

13. Which AWS service identifies security groups that allow unrestricted access to a user's AWS resources?

Answer: A. AWS Trusted Advisor.

- **Explanation:** **AWS Trusted Advisor** is a tool that inspects your AWS environment and provides recommendations across five categories (including Security). A common security check it performs is identifying security groups that have overly permissive rules (e.g., port 22 or 3389 open to 0.0.0.0/0).

14. Which design principles for cloud architecture are recommended when re-architecting a large monolithic application? (Select TWO)

Answer: C. Implement loose coupling. and E. Design for scalability.

- **Explanation:** When moving away from a monolith, you should:
 - **Implement loose coupling (C)** by breaking the application into smaller, independent services (microservices).
 - **Design for scalability (E)** by scaling horizontally (adding more instances) rather than vertically.

15. When architecting cloud applications, which of the following are a key design principle?

Answer: D. Implement elasticity.

- **Explanation: Elasticity** is a core design principle in the cloud, allowing resources to automatically scale up or down as demand fluctuates, optimizing both performance and cost.

16. A company has deployed several relational databases on Amazon EC2 instances. Every month the database software vendor releases new security patches that need to be applied to the databases. What is the MOST efficient way to apply the security patches?

Answer: D. Use AWS Systems Manager to automate database patching according to a schedule.

- **Explanation:** Since the databases are on EC2 (customer-managed), **AWS Systems Manager (SSM) Patch Manager** is the correct service to **automate** the process of scanning instances and applying patches across a fleet of EC2 instances efficiently and on a schedule.

17. Which mechanism allows developers to access AWS services from application code?

Answer: A. AWS Software Development Kit.

- **Explanation:** The **AWS Software Development Kits (SDKs)** provide APIs in various programming languages (Python, Java, Node.js, etc.) that developers use to write code that interacts with and manages AWS services programmatically.

18. Which AWS feature will reduce the customer's total cost of ownership (TCO)?

Answer: C. Elastic computing.

- **Explanation: Elastic computing** (or elasticity) allows customers to scale compute capacity up or down instantly. This ensures they only pay for the capacity they actually

use, eliminating the need to over-provision and buy "safety net" hardware, thereby significantly reducing **TCO**.

19. Which of the following is a benefit of using the AWS Cloud?

Answer: B. Ability to focus on revenue-generating activities.

- **Explanation:** By offloading the burden of managing data centers, hardware, and underlying infrastructure to AWS, companies can shift their focus and resources from undifferentiated heavy lifting (IT operations) to building and innovating their own products—the **revenue-generating activities**.

20. Which of the following are categories of AWS Trusted Advisor? (Select TWO)

Answer: A. Fault Tolerance. and D. Performance.

- **Explanation:** The five categories of AWS Trusted Advisor are: **Cost Optimization, Security, Fault Tolerance, Performance,** and Service Limits.

21. What is Amazon CloudWatch?

Answer: B. A metrics repository with customizable notification thresholds and channels.

- **Explanation:** **Amazon CloudWatch** collects logs and **metrics** from AWS resources and applications. Users can create alarms that trigger notifications (via SNS) or actions when a metric crosses a defined **threshold**.

22. Under the AWS shared responsibility model, which of the following activities are the customer's responsibility? (Select TWO)

Answer: B. Encrypting data on the client-side. and D. Configuring Network Access Control Lists (ACL).

- **Explanation:** These are Security *in* the Cloud responsibilities:
 - **Client-side data encryption (B)** and server-side encryption configuration are customer duties.
 - **Configuring NACLs (D)** and Security Groups (firewalls) is a customer network configuration duty.

23. Under the shared responsibility model, which of the following is a shared control between a customer and AWS?

Answer: B. Patch management.

- **Explanation:** **Patch Management** is a shared control:
 - AWS patches the underlying host OS/hypervisor (Security of the Cloud).

- The Customer patches the guest OS/application code on an EC2 instance (Security *in* the Cloud).

24. Which AWS service is used to pay AWS bills, and monitor usage and budget costs?

Answer: A. AWS Billing and Cost Management.

- **Explanation:** The **AWS Billing and Cost Management** console is the central place to view monthly charges, access the Cost Explorer, set up AWS Budgets, and manage payments.

25. How do customers benefit from Amazon's massive economies of scale?

Answer: A. Periodic price reductions as the result of Amazon's operational efficiencies.

- **Explanation: Economies of scale** mean that as AWS grows, its operational efficiency and purchasing power increase, allowing it to continuously lower prices for customers.

26. Which AWS feature allows a company to take advantage of usage tiers for services across multiple member accounts?

Answer: B. Consolidated billing.

- **Explanation: Consolidated Billing** (part of AWS Organizations) aggregates usage from all member accounts. This aggregation allows the entire organization to meet higher **usage tiers** and receive volume discounts that individual accounts might not qualify for.

27. Which AWS services provide a way to extend an on-premises architecture to the aws cloud? (Select TWO)

Answer: C. AWS Storage Gateway. and E. AWS Direct Connect.

- **Explanation:** These are hybrid cloud services:
 - **AWS Direct Connect (E)** provides dedicated network connectivity.
 - **AWS Storage Gateway (C)** connects on-premises applications to cloud storage (S3/EBS).

28. Which of the following services will automatically scale with an expected increase in web traffic?

Answer: B. Elastic Load Balancing.

- **Explanation: Elastic Load Balancing (ELB)** automatically scales its own request-handling capacity to manage fluctuating incoming web traffic, distributing it across healthy targets.

29. Which service provides a virtually unlimited amount of online highly durable object storage?

Answer: D. Amazon S3.

- **Explanation: Amazon Simple Storage Service (S3)** is the object storage service known for its **virtually unlimited storage** capacity and **high durability** (11 nines).

30. Which AWS feature should a customer leverage to achieve high availability of an application?

Answer: B. Availability Zones.

- **Explanation: Availability Zones (AZs)** are physically isolated failure domains. Deploying application components across multiple AZs is the fundamental way to achieve **high availability** within an AWS Region.

31. Which AWS service or feature can enhance network security by blocking requests from a particular network for a web application on AWS? (Select TWO)

Answer: A. AWS WAF. and E. Network ACLs.

- **Explanation:**
 - **AWS WAF (A)** (Web Application Firewall) can use IP match conditions to block requests based on source IP address at the application layer.
 - **Network ACLs (E)** operate at the subnet layer and can explicitly deny (block) traffic based on source IP ranges.

32. Which of the following is a cloud architectural design principle?

Answer: B. Loosely couple components.

- **Explanation: Loose coupling** is a key cloud design principle. It ensures that services are modular and independent, improving fault tolerance and allowing for easier updates and scaling.

33. Which service enables risk auditing by continuously monitoring and logging account activity, including user actions in the AWS Management Console and AWS SDKs?

Answer: B. AWS CloudTrail.

- **Explanation:** **AWS CloudTrail** continuously monitors and records API calls and user activity across your AWS account, providing an audit trail for governance, compliance, and risk auditing.

34. Where can AWS compliance and certification reports be downloaded?

Answer: A. AWS Artifact.

- **Explanation:** **AWS Artifact** is the self-service portal where customers can access and download AWS compliance reports (e.g., SOC, PCI, ISO certifications).

35. The financial benefits of using AWS are: (Select TWO)

Answer: A. Reduced Total Cost of Ownership (TCO). and C. Reduced operational expenditure (opex).

- **Explanation:**
 - Cloud usage can lead to a **Reduced TCO (A)** compared to on-premises.
 - It allows customers to replace upfront capital expenditure (CapEx) with pay-as-you-go **operational expenditure (OpEx) (C)**.

36. Which AWS service can serve a static website?

Answer: A. Amazon S3.

- **Explanation:** **Amazon S3** has a dedicated feature for hosting static websites directly from a bucket endpoint.

37. What are the benefits of using the AWS Cloud for companies with customers in many countries around the world (Select TWO)

Answer: A. Companies can deploy applications in multiple AWS Regions to reduce latency. and C. Amazon CloudFront has multiple edge locations around the world to reduce latency.

- **Explanation:**
 - **Multiple Regions (A)** allow the application backend to be geographically closer to users.
 - **CloudFront Edge Locations (C)** cache content closest to users, drastically reducing latency.

38. Which of the following are main components of the AWS global infrastructure? (Select TWO)

Answer: B. Availability Zones. and D. Regions.

- **Explanation:** The main components of the AWS Global Infrastructure are **Regions**, **Availability Zones (AZs)**, and Edge Locations.

39. What is the AWS customer responsible for according to the AWS shared responsibility model?

Answer: B. Data encryption.

- **Explanation:** The customer is responsible for **Security in the Cloud**, which includes managing and securing their data, including deciding whether and how to implement **data encryption** (both at rest and in transit).

40. If each department within a company has its own AWS account, what is one way to enable consolidated billing?

Answer: C. Create an AWS Organization from the payer account and invite the other accounts to join.

- **Explanation:** **AWS Organizations** is the service used to manage multiple accounts. By creating an Organization and making one account the **Payer account**, you enable **consolidated billing** for all invited member accounts.

41. What costs are included when comparing AWS Total Cost of Ownership (TCO) with on-premises TCO?

Answer: C. Data center security.

- **Explanation:** TCO comparisons typically include all costs related to operating the infrastructure. For on-premises, this includes physical infrastructure costs like **data center security**, power, cooling, and network.

42. What is the benefit of using AWS managed services, such as Amazon ElastiCache and Amazon Relational Database Service (Amazon RDS)?

Answer: C. They simplify patching and updating underlying OSs.

- **Explanation:** Managed services like RDS and ElastiCache simplify operations by handing over the management of the underlying operating system (OS) and software to AWS, including **patching and updating the OS (C)**.

43. Which services can be used across hybrid AWS Cloud architectures? (Select TWO)

Answer: A. Amazon Route 53. and B. Virtual Private Gateway.

- **Explanation:**
 - The **Virtual Private Gateway (B)** is the VPC side of a VPN or Direct Connect connection, essential for connecting the cloud to the on-premises environment.
 - **Amazon Route 53 (A)** can be used for hybrid DNS solutions, extending on-premises DNS to the cloud or routing traffic to either environment.

44. Which statement best describes Elastic Load Balancing?

Answer: B. It distributes incoming application traffic across one or more Amazon EC2 instances.

- **Explanation: Elastic Load Balancing (ELB)** is a service that automatically distributes or balances incoming application traffic across multiple targets, such as **Amazon EC2 instances**, in multiple Availability Zones.

45. Which of the following is a fast and reliable NoSQL database service?

Answer: C. Amazon DynamoDB.

- **Explanation: Amazon DynamoDB** is the fully managed, key-value and document database service that delivers single-digit millisecond performance at any scale, making it a **fast and reliable NoSQL database service**.

46. Which AWS service would you use to obtain compliance reports and certificates?

Answer: A. AWS Artifact.

- **Explanation: AWS Artifact** is the resource for accessing AWS compliance reports, such as SOC and PCI, and related certifications.

47. Which AWS services are defined as global instead of regional? (Select TWO)

Answer: A. Amazon Route 53. and D. Amazon CloudFront.

- **Explanation:** Global services operate across all regions and are configured from a single endpoint:
 - **Amazon Route 53 (A)** (DNS service).
 - **Amazon CloudFront (D)** (CDN uses global Edge Locations).
 - IAM is also considered global. Most other services (EC2, S3, DynamoDB) are configured per region.

48. How would an AWS customer easily apply common access controls to a large set of users?

Answer: A. Apply an IAM policy to an IAM group.

- **Explanation:** The recommended best practice is to assign permissions by function or responsibility. You attach the necessary **IAM Policy to an IAM Group**, and then add the individual users to that group. This applies the common access controls to all users in the group easily.

49. Which of the following is an important architectural design principle when designing cloud applications?

Answer: A. Use multiple Availability Zones.

- **Explanation:** Designing for high availability and fault tolerance is crucial. **Using multiple Availability Zones** ensures that the application is protected from the failure of a single data center (AZ).

50. Which service allows a company with multiple AWS accounts to combine its usage to obtain volume discounts?

Answer: B. AWS Organizations.

- **Explanation:** **AWS Organizations** enables the **Consolidated Billing** feature, which combines the usage from multiple accounts to achieve volume pricing discounts and leverage better pricing tiers.

Practice Exam 10: Answers and Explanations 📖

General Questions

1. Which of the following can an AWS customer use to launch a new Amazon Relational Database Service (Amazon RDS) cluster? (Select TWO)

Answer: B. AWS CloudFormation. and E. AWS Management Console.

- **Explanation:**
 - The **AWS Management Console (E)** is the web-based graphical interface used to interact with all AWS services, including launching an RDS cluster manually.¹
 - **AWS CloudFormation (B)** is the Infrastructure as Code (IaC) service used to model and provision AWS resources, including RDS clusters, automatically.²

2. Which of the following Reserved Instance (RI) pricing models provides the highest average savings compared to On-Demand pricing?

Answer: C. Three-year, All Upfront, Standard RI pricing.

- **Explanation:** RI savings increase with commitment level.³ The largest discount is achieved with the longest term (**Three-year**) and the highest commitment (**All Upfront**) using the **Standard** RI type (which offers better savings than Convertible, but less flexibility).

3. Which of the following are features of Amazon CloudWatch Logs? (Select TWO)

Answer: D. Real-time monitoring. and E. Adjustable retention.

- **Explanation:**
 - **CloudWatch Logs** enables **real-time monitoring (D)** of logs streamed from EC2 instances or other sources.⁴
 - It allows users to set a custom log **retention (E)** period (e.g., 30 days, 1 year, or never expire).⁵

4. Which of the following is an AWS-managed compute service?

Answer: C. AWS Lambda.

- **Explanation:** **AWS Lambda** is the premier serverless compute service.⁶ AWS completely manages the underlying compute resources, scaling, and patching.⁷

5. A company wants to reduce the physical compute footprint that developers use to run code. Which service would meet that need by enabling serverless architectures?

Answer: B. AWS Lambda.

- **Explanation:** **AWS Lambda** is a serverless compute service where the customer doesn't manage any servers.⁸ It automatically runs code in response to events, directly reducing the company's server management overhead and physical compute footprint.

6. Which of the following is the customer's responsibility under the AWS shared responsibility model?

Answer: C. Patching Amazon EC2 instances.

- **Explanation:** When using IaaS like **Amazon EC2**, the customer is responsible for the **Security in the Cloud**, which includes managing and **patching the guest operating system (OS)** running on the EC2 instance.⁹ AWS handles patching the underlying infrastructure (hypervisor/host OS).

7. According to the AWS shared responsibility model who is responsible for configuration management?

Answer: C. It is shared between AWS and the customer.

- **Explanation:** Configuration Management is a **shared control**:
 - **AWS** configures the underlying physical infrastructure and hypervisor.
 - The **Customer** configures their EC2 operating system, applications, network (VPC, Security Groups), and services like S3 bucket policies (Security *in* the Cloud).¹⁰

8. Which security service automatically recognizes and classifies sensitive data or intellectual property on AWS?

Answer: B. Amazon Macie.

- **Explanation:** **Amazon Macie** is a data security and privacy service that uses machine learning and pattern matching to discover, classify, and protect sensitive data (like personally identifiable information - PII) in AWS (primarily in S3).¹¹

9. Which of the following BEST describe the AWS pricing model? (Select TWO)

Answer: B. Pay-as-you-go. and E. Variable cost.

- **Explanation:**
 - **Pay-as-you-go (B)** means you only pay for the services you consume, with no long-term contracts.¹²
 - This structure makes your usage costs **variable (E)**, fluctuating based on actual demand, rather than being a fixed cost.

10. Under the shared responsibility model, which of the following tasks are the responsibility of the AWS customer? (Select TWO)

Answer: A. Ensuring that application data is encrypted at rest. and C. Ensuring that users have received security training in the use of AWS services.

- **Explanation:** These are **Security *in* the Cloud** responsibilities:
 - **Data Encryption (A)** is the customer's duty.
 - **Security Training (C)** and personnel management are the customer's responsibility.

11. A customer is using multiple AWS accounts with separate billing. How can the customer take advantage of volume discounts with minimal impact to the AWS resources?

Answer: C. Use the consolidated billing feature from AWS Organizations.

- **Explanation:** **Consolidated Billing** (via **AWS Organizations**) aggregates the usage across all linked accounts.¹³ This enables all accounts to benefit from volume pricing tiers without having to move any resources.

12. Which Amazon EC2 pricing model offers the MOST significant discount when compared to OnDemand Instances?

Answer: C. All Upfront Reserved Instances for a 3 year term.

- **Explanation:** The **Reserved Instance (RI)** model offers the greatest discounts. Discounts increase with term length (**3-year**) and commitment level (**All Upfront**).

13. Which AWS services should be used for read/write of constantly changing data? (Select TWO)

Answer: B. Amazon RDS. and E. Amazon EFS.

- **Explanation:**
 - **Amazon RDS (B)** is designed for transactional databases, handling constant reads/writes for relational data.¹⁴
 - **Amazon EFS (E)** is a scalable file system that supports frequent read/write access from multiple EC2 instances.¹⁵
 - Glacier (A) is for infrequent archive.¹⁶ Redshift (D) is for analytics/data warehousing.¹⁷

14. Which AWS service allows users to identify the changes made to a resource over time?

Answer: B. AWS Config.

- **Explanation:** **AWS Config** continuously monitors and records configuration changes for your AWS resources.¹⁸ It maintains a timeline of configuration history, allowing users to **identify changes made to a resource over time** and audit configurations.¹⁹

15. According to best practices, how should an application be designed to run in the AWS Cloud?

Answer: B. Use loosely coupled components.

- **Explanation:** A core principle of the AWS Well-Architected Framework is to design applications using **loosely coupled components**. This means components are independent, so the failure or change of one component does not affect the others, increasing resilience and agility.

16. Which benefits are included with the AWS Business Support plan? (Select TWO)

Answer: A. 24/7 assistance by way of live chat or a telephone call. and C. An unlimited number of cases and contacts.

- **Explanation:** The **Business Support Plan** provides **24/7 technical support (A)** via phone, email, and chat for critical issues, with **unlimited contacts and cases (C)**.²⁰

17. Which of the following is an AWS managed Domain Name System (DNS) web service?

Answer: A. Amazon Route 53.

- **Explanation: Amazon Route 53** is a highly available and scalable cloud **Domain Name System (DNS)** web service.²¹

18. A user must meet compliance and software licensing requirements that state a workload must be hosted on a physical server. When Amazon EC2 instance pricing option will meet these requirements?

Answer: A. Dedicated Hosts.

- **Explanation: Dedicated Hosts** are physical servers entirely allocated for your use.²² This hosting model is the only one that allows you to use eligible **server-bound software licenses** that require a specific physical server.

19. Which of the Reserved Instance (RI) pricing models can change the attributes of the RI as long as the exchange results in the creation of RIs of equal or greater value?

Answer: C. Convertible RIs.

- **Explanation: Convertible Reserved Instances** offer the flexibility to change the instance family, OS, tenancy, or payment option during the term, provided the exchange results in RIs of equal or greater value.²³

20. Which service is best for storing common database query results, which helps to alleviate database access load?

Answer: C. Amazon ElastiCache.

- **Explanation: Amazon ElastiCache** is a managed in-memory caching service (Redis or Memcached).²⁴ Caching frequent query results here significantly speeds up response times and **alleviates load on the backend database**.²⁵

21. When should a company consider using Amazon EC2 Spot Instances? (Select TWO)

Answer: A. For non-production applications. and D. For fault-tolerant flexible applications.

- **Explanation: Spot Instances** offer deep discounts but can be interrupted with a two-minute warning.²⁶ They are best for:
 - Workloads that are resilient to interruption (fault-tolerant/flexible) **(D)**.
 - Non-critical workloads like development, testing, or batch processing **(A)**.

22. Which AWS tools assist with estimating costs? (Select three)

Answer: C. AWS Simple Monthly Calculator. D. AWS Total Cost of Ownership (TCO) Calculator. and B. Cost allocation tags. (Note: The prompt asks for tools to assist with estimating costs. While Cost Allocation Tags are used for tracking/categorizing incurred costs, the three main calculators/estimators are typically considered C, D, and Cost Explorer (though Cost Explorer reviews actual costs, it's often used for forecasting). Assuming "Cost Estimator" (E) is a general term for these tools, the most accurate estimation tools are C and D. If a third must be chosen, let's stick to the official estimating tools as C and D, and the most common cost management feature B). Let's use C, D, and E (assuming Cost Estimator refers to a conceptual tool/process). Let's revise to the best formal choices which are the Calculators.

Revised Answer: C. AWS Simple Monthly Calculator. and D. AWS Total Cost of Ownership (TCO) Calculator. (Note: Only two are specific estimation calculators. A third tool often used for forward-looking analysis is AWS Cost Explorer, though it deals with incurred cost data.²⁷ Assuming the original question may have intended Cost Explorer, or is referring to Cost Allocation Tags to estimate future project costs based on past tag usage.) Sticking to the two primary estimation tools.

23. A company wants to focus on business activities instead of managing compute and capacity. Which AWS service can be used to automatically add or remove Amazon EC2 instances based on demand?

Answer: B. Amazon EC2 Auto Scaling.

- **Explanation: Amazon EC2 Auto Scaling** automatically adjusts the number of EC2 instances in a group based on observed metrics (like CPU utilization) or defined schedules.²⁸ This manages compute and capacity automatically, fitting the business goal.²⁹

24. Which is the minimum AWS Support plan that includes Infrastructure Event Management without additional costs?

Answer: A. Enterprise.

- **Explanation: Infrastructure Event Management (IEM)** is an optional, hands-on engagement with AWS Support for large-scale events (like product launches or migrations).³⁰ It is included at no additional cost only with the **Enterprise Support** plan.

25. Access keys in AWS Identity and Access Management (IAM) are used to:

Answer: B. Make programmatic calls to AWS from AWS APIs.

- **Explanation: An Access Key ID and Secret Access Key** are long-term credentials used by IAM users to make **programmatic calls** to AWS services via the AWS Command Line Interface (CLI), AWS SDKs, or direct API calls.³¹

26. Which AWS service can be used to query stored datasets directly from Amazon S3 using standard SQL?

Answer: D. Amazon Athena.

- **Explanation:** **Amazon Athena** is an interactive query service that makes it easy to analyze data directly in **Amazon S3** using standard **SQL**.³² It is serverless, so there is no infrastructure to manage.³³

27. How does AWS shorten the time to provision IT resources?

Answer: C. It provides the ability to programmatically provision existing resources.

- **Explanation:** AWS allows resources to be provisioned almost instantly via the Management Console, API, or CLI. By using Infrastructure as Code (e.g., CloudFormation), customers can **programmatically provision** resources, drastically **shortening the time** compared to ordering and installing physical hardware.

28. Which AWS services can be used to gather information about AWS account activity? (Select TWO)

Answer: C. AWS CloudTrail. and E. Amazon CloudWatch.

- **Explanation:**
 - **AWS CloudTrail (C)** records API calls and user actions, providing an audit trail of account activity.³⁴
 - **Amazon CloudWatch (E)** collects metrics, logs, and events related to resource usage and application performance, which is also account activity.³⁵

29. Which of the following are characteristics of Amazon S3? (Select TWO)

Answer: B. An object store. and E. A durable storage system.

- **Explanation:**
 - **Amazon S3** is a highly scalable **object storage (B)** service.³⁶
 - It is designed for **11 nines (99.99999999%) of durability (E)**.

30. A user wants guidance on possible savings when migrating from on-premises to AWS. Which tool is suitable for this scenario?

Answer: C. AWS Total Cost of Ownership (TCO) Calculator.

- **Explanation:** The **AWS TCO Calculator** is specifically designed to compare the costs of running an infrastructure on-premises versus running it on AWS, providing guidance on **possible savings** from migration.

31. Which of the following services is in the category of AWS serverless platform?

Answer: C. AWS Lambda.

- **Explanation: AWS Lambda** is the cornerstone service of the AWS serverless platform, providing function-as-a-service compute.³⁷

32. The use of what AWS feature or service allows companies to track and categorize spending on a detailed level?

Answer: A. Cost allocation tags.

- **Explanation: Cost allocation tags** (key-value labels applied to resources) allow companies to track costs and categorize spending across different dimensions (e.g., project, department, environment) in the Cost and Usage Report (CUR) and Cost Explorer.³⁸

33. Which of the following inspects AWS environments to find opportunities that can save money for users and also improve system performance?

Answer: B. AWS Trusted Advisor.

- **Explanation: AWS Trusted Advisor** provides checks across five categories, including **Cost Optimization** (saving money) and **Performance** (improving system performance).³⁹

34. Web servers running on Amazon EC2 access a legacy application running in a corporate data center.⁴⁰ What term would describe this model?

Answer: C. Hybrid architecture.

- **Explanation: A Hybrid architecture** (or hybrid cloud) is one that connects and runs workloads across both on-premises infrastructure (the corporate data center) and cloud infrastructure (AWS).

35. What technology enables compute capacity to adjust as loads change?

Answer: D. Auto Scaling.

- **Explanation: Auto Scaling** (specifically Amazon EC2 Auto Scaling) is the technology that automatically scales compute capacity (adds or removes instances) based on load or demand changes.⁴¹

36. Which AWS service is a managed NoSQL database?

Answer: B. Amazon DynamoDB.

- **Explanation:** **Amazon DynamoDB** is the fully managed, serverless, key-value and document database service offered by AWS, categorized as a **NoSQL** database.⁴²

37. Which of the following is a correct relationship between regions, Availability Zones, and edge locations?

Answer: B. Regions contain Availability Zones.⁴³

- **Explanation:** The hierarchy of the AWS Global Infrastructure is: **Region** (geographic area) \rightarrow **Availability Zone** (one or more data centers within a Region) \rightarrow **Edge Location** (used by CDN, separate from AZs).

38. What approach to transcoding a large number of individual video files adheres to AWS architecture principles?

Answer: A. Using many instances in parallel.

- **Explanation:** AWS architecture principles favor horizontal scaling and distributing work.⁴⁴ **Transcoding** is an inherently **parallelizable** workload, making it ideal for using **many instances in parallel** (scale out) rather than a single large instance (scale up).

39. Which AWS services can host a Microsoft SQL Server database? (Select TWO)

Answer: A. Amazon EC2. and B. Amazon Relational Database Service (Amazon RDS).

- **Explanation:**
 - You can install SQL Server yourself on an **Amazon EC2 (A)** instance (customer-managed).
 - You can use **Amazon RDS (B)**, which offers SQL Server as a managed database engine.⁴⁵

40. Which AWS IAM feature allows developers to access AWS services through the AWS CLI?

Answer: B. Access keys.

- **Explanation:** **Access keys** (Access Key ID and Secret Access Key) are the credentials used for programmatic access to AWS services, such as through the **AWS CLI**.⁴⁶

41. The user is fully responsible for which action when running workloads on AWS?

Answer: D. Implementing controls to route application traffic.

- **Explanation:** Under the Shared Responsibility Model, the customer is fully responsible for **Security in the Cloud**. This includes the configuration of networking (VPC, Subnets,

Gateways) and controls like **routing application traffic** (e.g., load balancers, routing tables).

42. Which AWS support plan includes a dedicated Technical Account Manager?

Answer: B. Enterprise.

- **Explanation:** A **Technical Account Manager (TAM)** is a dedicated point of contact provided only in the **AWS Enterprise Support** plan.⁴⁷

43. What time-savings advantage is offered with the use of Amazon Rekognition?

Answer: B. Amazon Rekognition provides automatic detection of objects appearing in pictures.⁴⁸

- **Explanation:** **Amazon Rekognition** is a machine learning service that automates image and video analysis tasks, such as **automatically detecting objects, scenes, and faces** (B), saving the time required for manual tagging or content review.⁴⁹

44. Which AWS service can be used to automatically scale an application up and down without making capacity planning decisions?

Answer: D. AWS Lambda.

- **Explanation:** **AWS Lambda** is the serverless computing service that automatically scales compute capacity in response to traffic and is billed per invocation and duration.⁵⁰ This inherently removes the need for **capacity planning decisions** regarding servers.

45. Amazon Relational Database Service (Amazon RDS) offers which of the following benefits over traditional database management?

Answer: B. AWS manages the maintenance of the operating system.

- **Explanation:** **Amazon RDS** is a managed service where AWS handles the underlying infrastructure, including provisioning, backups, patching, and the **maintenance of the database's operating system** (B).⁵¹

46. A company's web application currently has tight dependencies on underlying components so when one component fails the entire web application fails. Applying which AWS Cloud design principle will address the current design issue?

Answer: C. Focusing on decoupling components by isolating them and ensuring individual components can function when other components.

- **Explanation:** The current design has tight dependencies and single points of failure. The principle to address this is **decoupling (C)**, or **loose coupling**, which isolates components to improve overall fault tolerance and reliability.⁵²

47. A customer would like to design and build a new workload on AWS Cloud but does not have the AWS-related software technical expertise in-house. Which of the following AWS programs can a customer take advantage of to achieve that outcome?

Answer: C. AWS Partner Network Consulting Partners.

- **Explanation:** **AWS Partner Network (APN) Consulting Partners** are professional service firms that are trained and certified to design, architect, build, migrate, and manage customer workloads on AWS.⁵³

48. Which service stores objects, provides real-time access to those objects, and offers versioning and lifecycle capabilities?

Answer: C. Amazon S3.

- **Explanation:** **Amazon Simple Storage Service (S3)** is an **object storage** service that provides high durability, **real-time access**, and features like **versioning** and **lifecycle** rules.⁵⁴

49. Distributing workloads across multiple Availability Zones supports which cloud architecture design principle?

Answer: C. Design for failure.

- **Explanation:** Deploying across multiple Availability Zones (AZs) ensures that a failure in one AZ does not take down the entire workload.⁵⁵ This is a fundamental implementation of the **Design for failure** (or fault tolerance/resilience) principle.

50. Which service should a customer use to consolidate and centrally manage multiple AWS accounts?

Answer: B. AWS Organizations.

- **Explanation:** **AWS Organizations** is the service used to consolidate multiple AWS accounts into a single organizational unit, allowing for central management, governance, and consolidated billing.⁵⁶

Practice Exam 11: Answers and Explanations 📖

General Questions

1. How can a company reduce its Total Cost of Ownership (TCO) using AWS?

Answer: A. By minimizing large capital expenditures.

- **Explanation:** Moving to AWS converts the traditional model of large, upfront **capital expenditures (CapEx)** for hardware into a pay-as-you-go **variable operational expense (OpEx)**, which is the primary way TCO is reduced.⁵⁷

2. Which options does AWS make available for customers who want to learn about security in the cloud in an instructor-led setting? (Select TWO)

Answer: B. AWS Online Tech Talks. and E. AWS Classroom Training.

- **Explanation:**
 - **AWS Classroom Training (E)** provides formal, instructor-led courses.⁵⁸
 - **AWS Online Tech Talks (B)** often include live webinars or deep-dive sessions led by AWS experts, fitting the "instructor-led" context.⁵⁹

3. Which of the following will enhance the security of access to the AWS Management Console? (Select TWO)

Answer: C. AWS Multi-Factor Authentication (AWS MFA). and E. Password policies.

- **Explanation:** Both relate directly to user login security:
 - **AWS MFA (C)** adds a second factor required for login.
 - **Password policies (E)** (part of IAM) enforce complexity, length, and rotation to prevent weak passwords.⁶⁰

4. Which of the following features can be configured through the Amazon Virtual Private Cloud (Amazon VPC) Dashboard? (Select TWO)

Answer: C. Security Groups. and D. Subnets.

- **Explanation:** The **Amazon VPC Dashboard** is where you manage the logical network components for your VPC, including creating **Subnets (D)**, configuring **Security Groups (C)**, Route Tables, and Internet Gateways.⁶¹

5. For which auditing process does AWS have sole responsibility?

Answer: B. Physical security.

- **Explanation:** Under the Shared Responsibility Model, AWS is solely responsible for the **physical security** and auditing of the physical data centers (Security of the Cloud).

6. Which of the following are advantages of AWS consolidated billing? (Select TWO)

Answer: A. The ability to receive one bill for multiple accounts. and D. Potential volume discounts, as usage in all accounts is combined.

- **Explanation:** Consolidated billing, provided by AWS Organizations, simplifies invoicing by providing a **single bill (A)** and lowers costs by combining usage to achieve **volume discounts (D)**.⁶²

7. Which of the following common IT tasks can AWS cover to free up company IT resources? (Select TWO)

Answer: A. Patching databases software. and C. Backing up databases.

- **Explanation:** When using managed services like Amazon RDS, AWS automatically handles the common operational tasks of **patching the underlying database software (A)** and performing regular automated **backups (C)**, freeing customer resources.⁶³

8. A company wants to expand from one AWS Region into a second AWS Region. What does the company need to do to start supporting the new Region?

Answer: C. Begin deploying resources in the second Region.

- **Explanation:** AWS accounts are global by default. To use a new Region, you simply select it in the console or API and **begin deploying resources (C)** there. No new contract or configuration is typically needed to *start* using an available Region.

9. Why is it beneficial to use Elastic Load Balancers with applications?

Answer: C. They are capable of handling constant changes in network traffic patterns.⁶⁴ and They automatically adjust capacity.

- **Explanation:** **Elastic Load Balancers (ELBs)** are beneficial because they are inherently elastic, meaning they can **automatically adjust their own capacity** (scale) to handle constantly **changing network traffic patterns (C)**, ensuring availability and performance.⁶⁵

10. Which is the MINIMUM AWS Support plan that allows for one-hour target response time for support cases?

Answer: B. Business.

- **Explanation:** The **Business Support Plan** offers a one-hour target response time for "production system down" cases. Developer and Basic plans have slower response times.

11. What is the lowest-cost, durable storage option for retaining database backups for immediate retrieval?

Answer: A. Amazon S3.

- **Explanation:**

- **Amazon S3** provides durable storage at a low cost relative to block storage (EBS).⁶⁶
- It offers **immediate retrieval** (unlike Glacier/archive classes). Therefore, S3 Standard or S3 Standard-IA is often used as the target for database backups requiring immediate access.⁶⁷

12. What AWS team assists customers with accelerating cloud adoption through paid engagements in any of several specialty practice areas?

Answer: C. AWS Professional Services.

- **Explanation: AWS Professional Services** is a paid consulting arm of AWS that engages directly with customers on specific, outcome-driven projects to accelerate cloud adoption and build expertise.⁶⁸

13. A company needs 24/7 phone email and chat access with a response time of less than 1 hour if a production system has a service interruption Which AWS Support plan meets these requirements at the LOWEST cost?

Answer: C. Business.

- **Explanation:** The **Business Support Plan** is the minimum tier that provides **24/7 support** via phone, email, and chat, with a target response time of **less than 1 hour** for production system interruptions.

14. If a customer needs to audit the change management of AWS resources, which of the following AWS services should the customer use?

Answer: A. AWS Config.

- **Explanation: AWS Config** is the service that continuously monitors and records resource configurations, enabling detailed auditing of **change management** and compliance over time.⁶⁹

15. How does AWS Trusted Advisor provide guidance to users of the AWS Cloud? (Select TWO)

Answer: B. It provides a list of cost optimization recommendations based on current AWS usage. and C. It detects potential security vulnerabilities caused by permissions settings on account resources.

- **Explanation:** Trusted Advisor checks cover five categories, including **Cost Optimization (B)** (e.g., finding idle resources) and **Security (C)** (e.g., checking for overly permissive S3 bucket policies or Security Group rules).⁷⁰

16. Which AWS managed service is used to host databases?

Answer: D. Amazon RDS.

- **Explanation: Amazon Relational Database Service (RDS)** is the managed service used to host relational databases.⁷¹ (Amazon Aurora is also a managed database service, but RDS is the service umbrella).⁷²

17. Which of the following Identity and Access Management (IAM) entities is associated with an access key ID and secret access key when using AWS Command Line Interface (AWS CLI)?

Answer: B. IAM user.

- **Explanation:** An **IAM User** is the entity to which long-term credentials (Access Key ID and Secret Access Key) are assigned for programmatic access like the **AWS CLI**.⁷³

18. Under the shared responsibility model, which of the following is the customer responsible for?

Answer: C. Ensuring that data is encrypted at rest.

- **Explanation:** The customer is responsible for **Security in the Cloud**.⁷⁴ This includes the handling and security of their data, such as deciding whether to implement **encryption at rest**.⁷⁵

19. Which AWS service provides a simple and scalable shared file storage solution for use with Linux-based AWS and on-premises servers?

Answer: D. Amazon EFS.

- **Explanation: Amazon Elastic File System (EFS)** is a scalable, elastic **file storage** service that provides the Network File System (NFS) protocol, allowing it to be mounted and **shared** across multiple Linux instances (EC2 or on-premises).⁷⁶

20. What credential components are required to gain programmatic access to an AWS account? (Select TWO)

Answer: A. An access key ID. and C. A secret access key.

- **Explanation:** Programmatic access (via CLI, SDKs) requires the pair of **Access Key ID (A)** and **Secret Access Key (C)**.

21. Which of the following is a shared control between the customer and AWS?

Answer: D. Awareness.

- **Explanation: Awareness** and Training is a shared control: AWS trains its employees, and the customer trains their employees on cloud security best practices.⁷⁷

22. Which type of AWS storage is ephemeral and is deleted when an instance is stopped or terminated?

Answer: B. Amazon EC2 instance store.

- **Explanation: Amazon EC2 instance store** (sometimes called ephemeral storage) provides temporary block-level storage for an EC2 instance.⁷⁸ Data on an instance store volume is **deleted when the instance is stopped or terminated**.⁷⁹

23. Which of the following is an advantage of consolidated billing on AWS?

Answer: A. Volume pricing qualification.

- **Explanation: Consolidated billing** (via AWS Organizations) aggregates usage, allowing the entire organization to achieve better **volume pricing qualification** and discounts.⁸⁰

24. Which services are parts of the AWS serverless platform?

Answer: C. AWS Step Functions, Amazon DynamoDB, Amazon SNS.

- **Explanation:** All three services listed are serverless:
 - **AWS Step Functions:** Serverless orchestration.
 - **Amazon DynamoDB:** Serverless NoSQL database.
 - **Amazon SNS:** Serverless messaging service.

25. Which of the following Amazon EC2 pricing models allow customers to use existing server-bound software licenses?

Answer: C. Dedicated Hosts.

- **Explanation: Dedicated Hosts** are physical servers exclusively for your use, allowing customers to meet compliance and use eligible server-bound software licenses (BYOL).⁸¹

26. Which of the following security measures protect access to an AWS account? (Select TWO)

Answer: B. Grant least privilege access to IAM users. and E. Activate multi-factor authentication (MFA) for privileged users.

- **Explanation:** These are two fundamental security practices for account access:

- **Least Privilege (B):** Users only have the permissions needed to perform their job.
- **MFA (E):** Adds a second layer of security to the logon process.

27. Which AWS service provides the ability to manage infrastructure as code?

Answer: D. AWS CloudFormation.

- **Explanation:** **AWS CloudFormation** is the native AWS service that allows you to model, provision, and manage AWS resources as **infrastructure as code (IaC)**.⁸²

28. What is an advantage of deploying an application across multiple Availability Zones?

Answer: B. The application will have higher availability because it can withstand a service disruption in one Availability Zone.

- **Explanation:** Deploying across multiple AZs ensures **higher availability** because it eliminates the single point of failure and protects the application against a service disruption or failure in a single AZ.⁸³

29. A customer needs to run a MySQL database that easily scales. Which AWS service should they use?

Answer: A. Amazon Aurora.

- **Explanation:** **Amazon Aurora** is a MySQL-compatible relational database built for the cloud.⁸⁴ It is designed for high performance and **easily scales** storage and compute capacity automatically.

30. Which of the following is an AWS Cloud architecture design principle?

Answer: B. Implement loose coupling.

- **Explanation:** **Implementing loose coupling** is a foundational design principle for building resilient, agile, and modern applications on the AWS Cloud.⁸⁵

31. AWS Enterprise Support users have access to which service or feature that is not available to users with other AWS Support plans?

Answer: C. Concierge team.

- **Explanation:** The **Concierge Team** (or Support Concierge Service) is a dedicated point of contact for billing and account inquiries, exclusive to the **Enterprise Support** plan.⁸⁶

32. A company will be moving from an on-premises data center to the AWS Cloud. What would be one financial difference after the move?

Answer: C. Moving from upfront capital expense (capex) to variable operational expense (opex).

- **Explanation:** The primary financial difference of moving to the cloud is transitioning from paying for hardware upfront (**CapEx**) to paying for resources as you use them (**variable OpEx**).⁸⁷

33. When performing a cost analysis that supports physical isolation of a customer workload, which compute hosting model should be accounted for in the Total Cost of Ownership (TCO)?

Answer: A. Dedicated Hosts

- **Explanation: Dedicated Hosts** are the only EC2 hosting model that provides **physical isolation** (a single-tenant physical server), which is required for certain licensing or compliance needs, and therefore must be accounted for in the TCO analysis.⁸⁸

34. Which AWS service should be used for long-term, low-cost storage of data backups?

Answer: B. Amazon Glacier.

- **Explanation: Amazon S3 Glacier** (now S3 Glacier Flexible Retrieval/Deep Archive) is specifically designed for **long-term, low-cost storage** of data archives and backups where retrieval time is flexible (minutes to hours).⁸⁹

35. Which is the MINIMUM AWS Support plan that provides technical support through phone calls?

Answer: B. Business.

- **Explanation:** The **Business Support Plan** is the minimum plan that provides **24/7 technical support via phone, email, and chat**.⁹⁰

36. Which Amazon EC2 instance pricing model can provide discounts of up to 90%?

Answer: D. Spot Instances.

- **Explanation: Spot Instances** allow customers to bid on unused EC2 capacity and can provide discounts of up to **90%** compared to On-Demand pricing.⁹¹

37. Which of the following AWS services can be used to serve large amounts of online video content with the lowest possible latency? (Select TWO)

Answer: B. Amazon S3. and E. Amazon CloudFront.

- **Explanation:**

- **Amazon S3 (B)** is typically used as the highly durable, scalable origin store for the video content.
- **Amazon CloudFront (E)** (the CDN) is used to cache and deliver the content from **Edge Locations** closest to the user, providing the **lowest possible latency**.⁹²

38. What can AWS edge locations be used for? (Select TWO)

Answer: B. Delivering content closer to users. and D. Reducing traffic on the server by caching responses.

- **Explanation:** **Edge Locations** are part of the global network for **Amazon CloudFront**.⁹³ Their primary functions are **delivering content closer to users (B)** and **caching content (D)** to reduce the load on origin servers.

39. A company is planning to migrate from on-premises to the AWS Cloud. When AWS tool or service provides detailed reports on estimated cost savings after migration?

Answer: A. AWS Total Cost of Ownership (TCO) Calculator.

- **Explanation:** The **AWS TCO Calculator** generates detailed reports comparing the cost of running infrastructure on-premises versus on AWS, highlighting the estimated **cost savings** from migration.⁹⁴

40. Which AWS service provides a customized view of the health of specific AWS services that power a customer's workloads running on AWS?

Answer: C. AWS Personal Health Dashboard.

- **Explanation:** The **AWS Personal Health Dashboard (PHD)** provides a personalized view of the status and health of the AWS services that are specifically relevant to *your* account, alerting you to events that may impact *your* resources.⁹⁵

41. One of the advantages to moving infrastructure from an on-premises data center to the AWS Cloud is:

Answer: C. It allows the business to focus on business activities.

- **Explanation:** By relying on AWS to manage the undifferentiated heavy lifting of infrastructure, the company can redirect its resources and attention to its core mission and **business activities**.

42. How can an AWS user with an AWS Basic Support plan obtain technical assistance from AWS?

Answer: D. AWS Discussion Forums.

- **Explanation:** The **Basic Support Plan** offers limited technical support (only for account and billing issues).⁹⁶ The best way for a Basic user to obtain general technical assistance is through the **AWS Discussion Forums**.

43. How can a user protect against AWS service disruptions if a natural disaster affects an entire geographic area?

Answer: C. Deploy applications across multiple AWS Regions.

- **Explanation:** To protect against a disaster affecting an entire geographic area, which could take down an entire Region, applications must be deployed across **multiple, geographically separate AWS Regions**.

44. Which activity is a customer responsibility in the AWS Cloud according to the AWS shared responsibility model?

Answer: D. Ensuring Amazon EBS volumes are backed up.

- **Explanation:** Managing the data and its backup/recovery is a **Security in the Cloud** responsibility. Therefore, **ensuring EBS volumes are backed up (D)** is the customer's duty.

45. In which scenario should Amazon EC2 Spot Instances be used?

Answer: D. A company has a number of infrequent, interruptible jobs that are currently using On-Demand Instances.

- **Explanation:** **Spot Instances** are perfect for **interruptible jobs (D)** because they are non-critical and can be restarted if the capacity is reclaimed by AWS, allowing the company to realize significant cost savings.⁹⁷

44. A customer is deploying a new application and needs to choose an AWS Region. Which of the following factors could influence the customer's decision? (Select TWO)

Answer: A. Reduced latency to users. and C. Data sovereignty compliance.

- **Explanation:**
 - **Latency (A):** Choosing a Region closest to the majority of users reduces latency.⁹⁸
 - **Data Sovereignty/Compliance (C):** Regulations may require data to reside within a specific country or geographic boundary, dictating the Region choice.⁹⁹

47. Which AWS service provides alerts when an AWS event may impact a company's AWS resources?

Answer: A. AWS Personal Health Dashboard.

- **Explanation:** The **AWS Personal Health Dashboard (PHD)** is the service that provides personalized alerts and guidance when AWS events, such as a service disruption, are affecting the customer's resources.¹⁰⁰

48. Which disaster recovery scenario offers the lowest probability of down time?

Answer: D. Multi-site active-active.

- **Explanation: Multi-site active-active (D)** (sometimes called Hot Site or Dual/Multi-Region) has the lowest probability of downtime because the application is fully operational and serving traffic in multiple geographic locations simultaneously.

49. Which service's PRIMARY purpose is software version control?

Answer: D. AWS CodeCommit.

- **Explanation: AWS CodeCommit** is a fully managed source control service that hosts private Git repositories, making its primary purpose **software version control**.¹⁰¹

50. How can a customer increase security to AWS account logons? (Select TWO)

Answer: B. Enable Multi-Factor Authentication (MFA). and D. Configure a strong password policy.

- **Explanation:** These are two fundamental practices for securing the login process: **MFA (B)** and strong **password policies (D)** (e.g., length, complexity, rotation).

Practice Exam 12

1. Which of the following components of the AWS Global Infrastructure consists of one or more discrete data centers interconnected through low latency links?

Answer: A. Availability Zone

Explanation: An Availability Zone (AZ) is one or more distinct data centers within a Region, designed for fault isolation and connected by fast, low-latency links.

2. One benefit of On-Demand Amazon Elastic Compute Cloud (Amazon EC2) pricing is:

Answer: C. Paying only for time used.

Explanation: On-Demand pricing provides the flexibility to pay for compute capacity by the hour or second, with no long-term commitments or upfront costs.

3. What can assist in evaluating an application for migration to the cloud? (Select TWO)

Answer: A. AWS Trusted Advisor. D. AWS Partner Network (APN).

Explanation: AWS Trusted Advisor provides checks and recommendations on cost and performance, and AWS Partner Network (APN) Consulting Partners have expertise to help assess and manage migrations.

4. A characteristic of edge locations is that they:

Answer: B. Help lower latency and improve performance for users.

Explanation: Edge locations are used by services like Amazon CloudFront to cache content geographically closer to users, reducing latency and improving performance.

5. Which of the following are valid ways for a customer to interact with AWS services? (Select TWO)

Answer: A. Command line interface. C. Software Development Kits.

Explanation: Customers interact with AWS via the AWS Management Console (GUI), Command Line Interface (CLI), and Software Development Kits (SDKs) for programmatic access.

6. What is a value proposition of the AWS Cloud?

Answer: B. No long-term contract is required.

Explanation: A key value of the AWS Cloud is the pay-as-you-go model, meaning there are no required long-term contracts for standard services.

7. A company is migrating an application that is running non-interruptible workloads for a three-year time frame. Which pricing construct would provide the MOST cost-effective solution?

Answer: D. Amazon EC2 Reserved Instances.

Explanation: Reserved Instances (RI) offer significant discounts (up to 75%) over On-Demand pricing in exchange for committing to a one- or three-year term.

8. Which AWS service is used to track record, and audit configuration changes made to AWS resources?

Answer: B. AWS Config.

Explanation: AWS Config continuously tracks and records configuration changes for AWS resources, enabling auditing and compliance checks.

9. Which feature of the AWS Cloud will support an international company's requirement for low latency to all of its customers?

Answer: B. Global reach.

Explanation: The Global reach of the AWS infrastructure, including Regions and Edge Locations, allows resources to be placed geographically closer to a global customer base for low latency.

10. How can one AWS account use Reserved Instances from another AWS account?

Answer: B. By using AWS Organizations consolidated billing.

Explanation: When accounts are linked using Consolidated Billing in AWS Organizations, the benefit of Reserved Instances is shared and applied across all accounts.

11. What are the benefits of developing and running a new application in the AWS Cloud compared to on-premises? (Select TWO)

Answer: C. AWS makes it easy to architect for high availability. D. AWS can easily accommodate application demand changes.

Explanation: The cloud provides tools for high availability (Multi-AZ) and elasticity to automatically accommodate demand changes by scaling resources.

12. Which of the following services falls under the responsibility of the customer to maintain operating system configuration, security patching, and networking?

Answer: B. Amazon EC2.

Explanation: Amazon EC2 is Infrastructure-as-a-Service (IaaS), meaning the customer is responsible for managing the guest operating system and application security patching.

13. AWS supports which of the following methods to add security to Identity and Access Management (IAM) users? (Select TWO)

Answer: D. Using Multi-Factor Authentication (MFA). E. Enforcing password strength and expiration.

Explanation: Strong IAM security practices require mandatory use of Multi-Factor Authentication (MFA) and enforcing robust password policies.

14. Which service provides a hybrid storage service that enables on-premises applications to seamlessly use cloud storage?

Answer: C. AWS Storage Gateway

Explanation: AWS Storage Gateway connects an on-premises software appliance with cloud-based storage, enabling seamless hybrid storage.

15. Where should a company go to search software listings from independent software vendors to find, test, buy and deploy software that runs on AWS?

Answer: A. AWS Marketplace.

Explanation: The AWS Marketplace is a curated digital catalog for discovering, procuring, and deploying third-party software that runs on AWS.

16. Which of the following is a component of the AWS Global Infrastructure?

Answer: B. AWS Regions.

Explanation: The AWS Global Infrastructure consists of Regions, Availability Zones, and Edge Locations.

17. Which Amazon EC2 pricing model adjusts based on supply and demand of EC2 instances?

Answer: C. Spot Instances.

Explanation: Spot Instances allow you to bid on spare EC2 capacity, and their price floats based on the supply and demand for that capacity.

18. A company wants to migrate its applications to a VPC on AWS. These applications will need to access on-premises resources. What combination of actions will enable the company to accomplish this goal? (Select TWO)

Answer: B. Build a VPN connection between an on-premises device and a virtual private gateway in the new VPC. D. Connect the company's on-premises data center to AWS using AWS Direct Connect.

Explanation: Hybrid connectivity can be achieved using a secure VPN connection over the internet or a dedicated private network connection via AWS Direct Connect.

19. A Cloud Practitioner must determine if any security groups in an AWS account have been provisioned to allow unrestricted access for specific ports. What is the SIMPLEST way to do this?

Answer: B. Run AWS Trusted Advisor and review the findings.

Explanation: AWS Trusted Advisor includes a security check that automatically reports on security groups with overly permissive inbound access (0.0.0.0/0).

20. Which of the following security-related services does AWS offer? (Select TWO)

Answer: B. AWS Trusted Advisor security checks. C. Data encryption.

Explanation: AWS offers Trusted Advisor security checks for best practices and extensive services and features for data encryption at rest and in transit.

21. Which of the following services have Distributed Denial of Service (DDoS) mitigation features? (Select TWO)

Answer: A. AWS WAF. D. Amazon CloudFront.

Explanation: Amazon CloudFront (by default) and AWS WAF (Web Application Firewall) protect applications against DDoS attacks.

22. Which of the following AWS features enables a user to launch a pre-configured Amazon Elastic Compute Cloud (Amazon EC2) instance?

Answer: B. Amazon Machine Image.

Explanation: An Amazon Machine Image (AMI) is a pre-configured template containing the OS, software, and settings needed to launch an EC2 instance.

23. A solution that is able to support growth in users, traffic, or data size with no drop in performance aligns with which cloud architecture principle?

Answer: B. Implement elasticity.

Explanation: Elasticity is the ability of a system to automatically scale its compute capacity up or down to support growth and maintain performance.

24. Which AWS Cloud benefit eliminates the need for users to try estimating future infrastructure usage?

Answer: C. Elasticity of the AWS Cloud.

Explanation: Elasticity removes the need for upfront capacity planning or "guessing" future needs by scaling resources automatically as demand changes.

25. What can users access from AWS Artifact?

Answer: A. AWS security and compliance documents.

Explanation: AWS Artifact is a portal for on-demand access to AWS's security and compliance documents, such as SOC, ISO, and PCI reports.

26. Compared with costs in traditional and virtualized data centers, AWS has:

Answer: D. Lower variable costs and lower upfront costs.

Explanation: Cloud computing eliminates capital expenditures (lower upfront costs) and shifts to a consumption-based model, often leading to lower variable costs due to economies of scale.

27. Which AWS service would a customer use with a static website to achieve lower latency and high transfer speeds?

Answer: D. Amazon CloudFront.

Explanation: Amazon CloudFront, a Content Delivery Network (CDN), caches content at Edge Locations globally to provide low latency and high transfer speeds.

28. How do Amazon EC2 Auto Scaling groups help achieve high availability for a web application?

Answer: B. They automatically add or replace instances across multiple Availability Zones when the application needs it.

Explanation: Auto Scaling ensures high availability by replacing failed instances and scaling capacity (adding instances) across multiple Availability Zones.

29. Which of the following can limit Amazon Simple Storage Service (Amazon S3) bucket access to specific users?

Answer: C. AWS Identity and Access Management (IAM) policies.

Explanation: AWS IAM policies (specifically bucket policies or user policies) are used to define permissions and limit access to S3 buckets.

30. How should a customer forecast the future costs for running a new web application?

Answer: C. AWS Simple Monthly Calculator.

Explanation: The AWS Simple Monthly Calculator (or AWS Pricing Calculator) is the tool designed to estimate and forecast the expected costs of using AWS services.

31. Where are AWS compliance documents, such as an SOC 1 report, located?

Answer: C. AWS Artifact.

Explanation: AWS Artifact is the dedicated portal for accessing compliance documentation like SOC, ISO, and PCI reports.

32. Which of the following tasks is the responsibility of AWS?

Answer: C. Securing the Amazon EC2 hypervisor.

Explanation: Under the shared responsibility model, AWS is responsible for the security of the cloud, which includes managing the underlying infrastructure and the hypervisor.

33. Under the shared responsibility model which of the following areas are the customer's responsibility? (Select TWO)

Answer: B. Patching of operating systems. E. Configuration of the security group.

Explanation: The customer is responsible for security in the cloud, which includes patching the guest OS on EC2 and configuring network controls like the Security Group.

34. A company is looking for a scalable data warehouse solution. Which of the following AWS solutions would meet the company's needs?

Answer: D. Amazon Redshift.

Explanation: Amazon Redshift is a fully managed, petabyte-scale cloud data warehouse service designed for analytical queries on massive datasets.

35. Which AWS services provide a way to extend an on-premises architecture to the AWS Cloud? (Select TWO)

Answer: B. AWS Direct Connect. D. AWS Storage Gateway.

Explanation: AWS Direct Connect provides a dedicated private network connection, and AWS Storage Gateway enables on-premises applications to seamlessly use cloud storage.

36. What are the advantages of the AWS Cloud (Select TWO)

Answer: B. No need to guess capacity requirements. C. Increased speed to market.

Explanation: Advantages include elasticity (removing the need to guess capacity) and agility, which results in increased speed to market for new applications.

37. How can the AWS Cloud increase user workforce productivity after migration from an on-premises data center?

Answer: A. Users do not have to wait for infrastructure provisioning.

Explanation: The cloud enables rapid, self-service provisioning, meaning developers and users don't have to wait for IT to deliver new compute resources, thereby increasing productivity.

38. Which of the following services could be used to deploy an application to servers running on-premises? (Select TWO)

Answer: B. AWS OpsWorks. C. AWS CodeDeploy.

Explanation: Both AWS CodeDeploy and AWS OpsWorks (using Chef/Puppet) can automate application deployments to instances running both on AWS and on-premises.

39. What is an example of agility in the AWS Cloud?

Answer: D. Decreased acquisition time for new compute resources.

Explanation: Agility refers to the speed and ease with which you can rapidly provision, de-provision, and scale resources, leading to decreased acquisition time.

40. Which AWS security service protects applications from distributed denial of service attacks with always-on detection and automatic inline mitigations?

Answer: D. AWS Shield.

Explanation: AWS Shield is a managed DDoS protection service that safeguards applications running on AWS with perpetual detection and mitigation capabilities.

41. Which of the following are advantages of AWS consolidated billing? (Choose two)

Answer: A. The ability to receive one bill for multiple accounts. D. Potential volume discounts, as usage in all accounts is combined.

Explanation: Consolidated billing simplifies invoicing with one bill and optimizes costs by applying volume discounts based on aggregated usage.

42. A company is considering using AWS for a self-hosted database that requires a nightly shutdown for maintenance and cost-saving purposes. Which service should the company use?

Answer: D. Amazon EC2 with Amazon Elastic Block Store (Amazon EBS).

Explanation: Amazon EC2 allows for a self-hosted database that can be shut down, and Amazon EBS ensures the persistent data remains available after the instance is stopped.

Practice Exam 13

1. The use of what AWS feature or service allows companies to track and categorize spending on a detailed level?

Answer: A. Cost allocation tags

Explanation: Cost allocation tags are key-value pairs assigned to resources that allow organizations to track and categorize spending for detailed billing analysis.

2. Which service stores objects, provides real-time access to those objects, and offers versioning and lifecycle capabilities?

Answer: C. Amazon S3

Explanation: Amazon S3 is a highly durable object storage service that provides real-time access and supports features like versioning and lifecycle management.

3. What AWS team assists customers with accelerating cloud adoption through paid engagements in any of several specialty practice area ?

Answer: C. AWS Professional Services

Explanation: AWS Professional Services is a paid team of experts that assists enterprise customers with accelerating their cloud adoption and transformation.

4. A customer would like to design and build a new workload on AWS Cloud but does not have the AWS-related software technical expertise in-house. Which of the following AWS programs can a customer take advantage of to achieve that outcome?

Answer: C. AWS Partner Network Consulting Partners

Explanation: AWS Partner Network (APN) Consulting Partners are firms that are trained and certified to help customers design, architect, and build workloads on AWS.

5. Distributing workloads across multiple Availability Zones supports which cloud architecture design principle?

Answer: C. Design for failure.

Explanation: Designing for failure involves deploying across multiple, independent Availability Zones so that an outage in one location does not stop the application.

6. Which AWS services can host a Microsoft SQL Server database? (Select TWO)

Answer: A. Amazon EC2 B. Amazon Relational Database Service (Amazon RDS)

Explanation: SQL Server can be hosted on a self-managed Amazon EC2 instance or as a managed database service using Amazon RDS.

7. Which of the following inspects AWS environments to find opportunities that can save money for users and also improve system performance ?

Answer: B. AWS Trusted Advisor

Explanation: AWS Trusted Advisor provides real-time guidance by inspecting your environment for best practices related to cost optimization, performance, and security.

8. Which of the following Amazon EC2 pricing models allow customers to use existing server-bound software license ?

Answer: C. Dedicated Hosts

Explanation: Dedicated Hosts provide a physical server for your EC2 instances, which is required by some software vendors to utilize existing server-bound licenses.

9. Which AWS characteristics make AWS cost effective for a workload with dynamic user demand? (Select TWO)

Answer: C. Elasticity D. Pay-as-you-go pricing

Explanation: Elasticity lets you scale resources to meet dynamic demand, and pay-as-you-go pricing means you only pay for what you use, optimizing costs.

10. Which service enables risk auditing by continuously monitoring and logging account activity, including user actions in the AWS Management Console and AWS SDKs?

Answer: B. AWS CloudTrail

Explanation: AWS CloudTrail records all API calls and user actions made in your AWS account, providing a history of activity for security analysis and risk auditing.

11. Which of the following are characteristics of Amazon S3? (Select TWO.)

Answer: B. An object store E. A durable storage system

Explanation: Amazon S3 is a highly scalable, high-durability (99.999999999%) object store.

12. Which services can be used across hybrid AWS Cloud architectures? (Select TWO.)

Answer: A. Amazon Route 53 B. Virtual Private Gateway

Explanation: Amazon Route 53 (DNS) can manage both cloud and on-premises domains, and the Virtual Private Gateway is essential for creating VPN connections to the on-premises network.

13. What costs are included when comparing AWS Total Cost of Ownership (TCO) with on-premises TCO?

Answer: C. Data center security

Explanation: The TCO comparison includes infrastructure costs like hardware, power, cooling, and the physical security of the data center.

14. A company is considering using AWS for a self-hosted database that requires a nightly shutdown for maintenance and cost-saving purposes. Which service should the company use?

Answer: D. Amazon EC2 with Amazon Elastic Block Store (Amazon EBS)

Explanation: An Amazon EC2 instance allows for a self-hosted database that can be stopped nightly, and Amazon EBS provides persistent storage to keep the data safe during the shutdown.

15. Which of the following is a correct relationship between regions, Availability Zones, and edge locations?

Answer: B. Regions contain Availability Zones.

Explanation: An AWS Region is a geographic area that contains two or more, isolated, and physically separate Availability Zones (AZs).

16. Which AWS tools assist with estimating costs? (Select three.)

Answer: B. Cost allocation tags C. AWS Simple Monthly Calculator D. AWS Total Cost of Ownership (TCO) Calculator

Explanation: The AWS Simple Monthly Calculator and TCO Calculator are used for upfront estimation, while Cost Allocation Tags help categorize and track actual spending.

17. Which of the following are advantages of AWS consolidated billing? (Select TWO.)

Answer: A. The ability to receive one bill for multiple accounts D. Potential volume discounts, as usage in all accounts is combined

Explanation: Consolidated billing simplifies invoicing with a single bill and optimizes costs by applying volume discounts based on the aggregated usage.

18. Which of the following Reserved Instance (RI) pricing models provides the highest average savings compared to On-Demand pricing?

Answer: C. Three-year, All Upfront, Standard RI pricing

Explanation: The maximum commitment (three-year term) combined with the highest upfront payment (All Upfront) results in the highest discount for Reserved Instances.

19. Compared with costs in traditional and virtualized data centers, AWS has:

Answer: D. lower variable costs and lower upfront costs.

Explanation: AWS eliminates capital expenditures (lower upfront costs) and leverages economies of scale to offer lower variable costs compared to traditional data centers.

20. A characteristic of edge locations is that they:

Answer: B. help lower latency and improve performance for users.

Explanation: Edge locations are geographically distributed sites used by CloudFront to cache content closer to end-users, which lowers latency.

21. Which of the following can limit Amazon Storage Service (Amazon S3) bucket access to specific users?

Answer: C. AWS Identity and Access Management (IAM) policies

Explanation: AWS IAM policies (applied to users/roles or the S3 bucket) are the primary security tool used to define and limit access permissions to S3.

22. Which of the following security-related actions are available at no cost?

Answer: C. Accessing forums, blogs, and whitepapers

Explanation: AWS provides security best practices, guidance, and information for free through online resources like whitepapers and blogs.

23. Which of the Reserved Instance (RI) pricing models can change the attributes of the RI as long as the exchange results in the creation of RIs of equal or greater value?

Answer: C. Convertible RIs

Explanation: Convertible Reserved Instances offer the flexibility to change the instance family, OS, or tenancy of the RI during the term.

24. Which AWS feature will reduce the customer's total cost of ownership (TCO)?

Answer: C. Elastic computing

Explanation: Elasticity reduces TCO by ensuring customers only pay for the capacity they use, scaling down during low demand to save costs.

25. Which of the following services will automatically scale with an expected increase in web traffic?

Answer: B. Elastic Load Balancing

Explanation: Elastic Load Balancing (ELB) automatically scales its request-handling capacity in response to the volume of incoming application traffic.

26. Where are AWS compliance documents, such as an SOC 1 report, located?

Answer: C. AWS Artifact

Explanation: AWS Artifact is the dedicated portal for accessing AWS compliance reports, such as SOC, ISO, and PCI certifications.

27. Under the AWS shared responsibility model, which of the following activities are the customer's responsibility? (Select TWO.)

Answer: B. Encrypting data on the client-side D. Configuring Network Access Control Lists (ACL)

Explanation: The customer is responsible for security in the cloud, including data encryption and configuring network security controls like Network ACLs.

28. Which is a recommended pattern for designing a highly available architecture on AWS?

Answer: C. Ensure that the application is designed to accommodate failure of any single component.

Explanation: A core principle for high availability is to design for failure, ensuring redundancy so the failure of any component does not stop the application.

29. According to best practices, how should an application be designed to run in the AWS Cloud?

Answer: B. Use loosely coupled components.

Explanation: Cloud best practices promote using loosely coupled components so that a failure or modification to one component does not affect the others.

30. AWS supports which of the following methods to add security to Identity and Access Management (IAM) users? (Select TWO.)

Answer: D. Using Multi-Factor Authentication (MFA) E. Enforcing password strength and expiration

Explanation: Robust IAM security involves mandatory use of Multi-Factor Authentication (MFA) and defining a strong password policy.

31. Which AWS services should be used for read/write of constantly changing data? (Select TWO.)

Answer: B. Amazon RDS E. Amazon EFS

Explanation: Both Amazon RDS (for managed databases) and Amazon EFS (for shared file systems) are designed for frequent read/write operations and constantly changing data.

32. What is one of the advantages of the Amazon Relational Database Service (Amazon RDS)?

Answer: A. It simplifies relational database administration tasks.

Explanation: Amazon RDS is a managed service that handles routine tasks like patching, backups, and replication, significantly simplifying administration.

33. A customer needs to run a MySQL database that easily scales. Which AWS service should they use?

Answer: A. Amazon Aurora

Explanation: Amazon Aurora is a high-performance, fully managed, MySQL and PostgreSQL-compatible database designed to easily scale with demand.

34. Which of the following components of the AWS Global Infrastructure consists of one or more discrete data centers interconnected through low latency links?

Answer: A. Availability Zone

Explanation: An Availability Zone (AZ) is one or more distinct data centers within a Region, interconnected by fast, low-latency links.

35. Which of the following is a shared control between the customer and AWS?

Answer: D. Awareness and training

Explanation: Awareness and Training is a shared control—AWS trains its employees, and the customer trains their employees.

36. How many Availability Zones should compute resources be provisioned across to achieve high availability?

Answer: B. A minimum of two

Explanation: To ensure high availability and fault tolerance, resources must be provisioned across a minimum of two Availability Zones to survive a single AZ failure.

37. One of the advantages to moving infrastructure from an on-premises data center to the AWS Cloud is:

Answer: C. it allows the business to focus on business activities.

Explanation: By moving to the cloud, the business offloads infrastructure management to AWS, allowing the IT staff to focus on core business activities.

38. What is the lowest-cost, durable storage option for retaining database backups for immediate retrieval?

Answer: A. Amazon S3

Explanation: Amazon S3 is a highly durable and relatively low-cost object storage service that provides immediate retrieval of data.

39. Which AWS IAM feature allows developers to access AWS services through the AWS CLI?

Answer: B. Access keys

Explanation: Access keys (Access Key ID and Secret Access Key) are the security credentials used for programmatic access to AWS, such as through the AWS CLI.

40. Which of the following is a fast and reliable NoSQL database service?

Answer: C. Amazon DynamoDB

Explanation: Amazon DynamoDB is a fully managed, key-value and document database that delivers single-digit millisecond performance at any scale, making it a fast NoSQL service.

41. What is an example of agility in the AWS Cloud?

Answer: D. Decreased acquisition time for new compute resources

Explanation: Agility is the ability to rapidly provision and scale resources, resulting in a decreased acquisition time for new infrastructure.

42. Which service should a customer use to consolidate and centrally manage multiple AWS accounts?

Answer: B. AWS Organizations

Explanation: AWS Organizations allows you to consolidate and centrally manage multiple AWS accounts under one master account.

43. What approach to transcoding a large number of individual video files adheres to AWS architecture principles?

Answer: A. Using many instances in parallel

Explanation: The cloud architecture principle of "Thinking parallel" suggests breaking down large tasks and processing them concurrently using many instances.

44. For which auditing process does AWS have sole responsibility?

Answer: B. Physical security

Explanation: Under the shared responsibility model, AWS has sole responsibility for the physical security of the data centers and the underlying infrastructure.

45. Which feature of the AWS Cloud will support an international company's requirement for low latency to all of its customers?

Answer: B. Global reach

Explanation: The Global reach of the AWS infrastructure, comprising Regions and Edge Locations, allows the company to deploy resources closer to its international customers for low latency.

46. Which of the following is the customer's responsibility under the AWS shared responsibility model?

Answer: C. Patching Amazon EC2 instances

Explanation: The customer is responsible for security in the cloud, which includes managing the guest OS and application, such as patching the Amazon EC2 instance.

47. A customer is using multiple AWS accounts with separate billing. How can the customer take advantage of volume discounts with minimal impact to the AWS resources?

Answer: C. Use the consolidated billing feature from AWS Organizations.

Explanation: Consolidated billing aggregates usage across accounts, enabling the application of volume discounts without needing to move or change existing resources.

48. Which of the following are features of Amazon CloudWatch Logs? (Select TWO.)

Answer: D. Real-time monitoring E. Adjustable retention

Explanation: CloudWatch Logs enables real-time monitoring of log data and allows users to configure the retention period for the logs.

49. Which of the following is an AWS managed Domain Name System (DNS) web service?

Answer: A. Amazon Route 53

Explanation: Amazon Route 53 is a highly available and scalable cloud Domain Name System (DNS) web service.

50. A customer is deploying a new application and needs to choose an AWS Region. Which of the following factors could influence the customer's decision? (Select TWO.)

Answer: A. Reduced latency to users C. Data sovereignty compliance

Explanation: Key factors for Region selection are meeting data sovereignty/regulatory compliance requirements and placing resources closer to the end-users to reduce latency.

I can certainly reformat Practice Exam 14 and the beginning of Practice Exam 15 to match your desired structure with the Question Number, Answer, and a brief Explanation.

Here are the practice exams in the requested format:

Practice Exam 14

1. Which storage service can be used as a low-cost option for hosting static websites?

Answer: D. Amazon Simple Storage Service (Amazon S3)

Explanation: Amazon S3 is an object storage service that can be configured to host a static website, providing high durability and scalability at a low cost.¹

2. Which Amazon EC2 instance pricing model can provide discounts of up to 90%?

Answer: D. Spot Instances

Explanation: Spot Instances allow you to bid on unused Amazon EC2 capacity and can offer significant discounts, up to 90%, in exchange for being interruptible.²

3. What is the AWS customer responsible for according to the AWS shared responsibility model?

Answer: B. Data encryption

Explanation: The customer is responsible for security in the cloud, which includes managing their application data and ensuring that data encryption is configured.³

4. Which of the following AWS Cloud services can be used to run a customer-managed relational database?

Answer: A. Amazon EC2

Explanation: Amazon EC2 is Infrastructure as a Service (IaaS), providing a virtual server where a customer can install and fully manage their own operating system and database software.⁴

5. A company is looking for a scalable data warehouse solution. Which of the following AWS solutions would meet the company's needs?

Answer: D. Amazon Redshift

Explanation: Amazon Redshift is a fully managed, petabyte-scale cloud data warehouse service optimized for performing complex analytical queries on large datasets.⁵

6. Which statement best describes Elastic Load Balancing?

Answer: B. It distributes incoming application traffic across one or more Amazon EC2 instances.⁶

Explanation: Elastic Load Balancing (ELB) automatically distributes incoming application traffic across multiple targets, such as EC2 instances, to ensure application availability and performance.⁷

7. Which of the following are valid ways for a customer to interact with AWS services? (Select TWO.)

Answer: A. Command line interface C. Software Development Kits

Explanation: Customers interact with AWS programmatically using the Command Line Interface (CLI) and Software Development Kits (SDKs), in addition to the AWS Management Console (GUI).⁸

8. The AWS Cloud's multiple Regions are an example of:

Answer: B. global infrastructure.

Explanation: The structure of AWS Regions and Availability Zones represents the physical global infrastructure designed for high availability and low-latency access worldwide.⁹

9. Which of the following AWS services can be used to serve large amounts of online video content with the lowest possible latency? (Select TWO.)

Answer: B. Amazon S3 E. Amazon CloudFront

Explanation: Amazon S3 stores the video objects, and Amazon CloudFront, a CDN, caches the content at edge locations globally to deliver it with the lowest possible latency.

10. Web servers running on Amazon EC2 access a legacy application running in a corporate data center. What term would describe this model?

Answer: C. Hybrid architecture

Explanation: A hybrid architecture describes an environment that combines cloud resources (like EC2) with on-premises infrastructure (like a corporate data center).¹⁰

11. What is the benefit of using AWS managed services, such as Amazon ElastiCache and Amazon Relational Database Service (Amazon RDS)?

Answer: C. They simplify patching and updating underlying OSs.

Explanation: Managed services like RDS and ElastiCache automate administrative tasks for the customer, including routine maintenance like patching and updating the underlying operating systems.¹¹

12. Which service provides a virtually unlimited amount of online highly durable object storage?

Answer: D. Amazon S3

Explanation: Amazon S3 is designed for virtually unlimited scale and is known for its extreme data durability (99.999999999%) over many years.¹²

13. Which of the following Identity and Access Management (IAM) entities is associated with an access key ID and secret access key when using AWS Command Line Interface (AWS CLI)?

Answer: B. IAM user

Explanation: IAM users (or the account root user) are the entities that are issued long-term credentials like an access key ID and secret access key for programmatic access via the AWS CLI or SDKs.¹³

14. Which of the following security-related services does AWS offer? (Select TWO.)

Answer: B. AWS Trusted Advisor security checks C. Data encryption

Explanation: AWS provides security best practices checks through Trusted Advisor and offers multiple services and features for data encryption at rest and in transit.

15. Which AWS managed service is used to host databases?

Answer: D. Amazon RDS

Explanation: Amazon Relational Database Service (Amazon RDS) is a fully managed service that makes it easy to set up, operate, and scale a relational database in the cloud.¹⁴

16. Which AWS service provides a simple and scalable shared file storage solution for use with Linux-based AWS and on-premises servers?

Answer: D. Amazon EFS

Explanation: Amazon Elastic File System (Amazon EFS) provides a scalable, fully managed, network file system that can be shared across multiple EC2 instances and on-premises servers.¹⁵

17. When architecting cloud applications, which of the following are a key design principle?

Answer: D. Implement elasticity

Explanation: Implementing elasticity is a core cloud design principle that allows systems to automatically scale capacity to match demand, avoiding over-provisioning.¹⁶

18. Which AWS service should be used for long-term, low-cost storage of data backups?

Answer: B. Amazon Glacier

Explanation: Amazon Glacier (now part of the Amazon S3 Glacier storage classes) is specifically designed for secure, durable, and low-cost storage for data archiving and long-term backup.¹⁷

19. Which task is AWS responsible for in the shared responsibility model for security and compliance?

Answer: C. Updating Amazon EC2 host firmware

Explanation: AWS is responsible for the security of the cloud, which includes managing the underlying infrastructure, like the physical hardware and the hypervisor (host firmware).¹⁸

20. Where should a company go to search software listings from independent software vendors to find, test, buy and deploy software that runs on AWS?

Answer: A. AWS Marketplace

Explanation: The AWS Marketplace is a digital catalog where users can find, test, buy, and deploy thousands of software listings from third-party vendors.¹⁹

21. Which of the following is a benefit of using the AWS Cloud?

Answer: B. Ability to focus on revenue-generating activities.

Explanation: By offloading infrastructure management to AWS, the IT staff can shift their focus and resources to revenue-generating activities for the business.

22. When performing a cost analysis that supports physical isolation of a customer workload, which compute hosting model should be accounted for in the Total Cost of Ownership (TCO)?

Answer: A. Dedicated Hosts

Explanation: Dedicated Hosts provide a physical server for your use, which may be required for specific compliance needs or to utilize existing server-bound software licenses.²⁰

23. Which AWS service provides the ability to manage infrastructure as code?

Answer: D. AWS CloudFormation

Explanation: AWS CloudFormation allows you to describe your entire infrastructure in a text file (template) and provision it in an automated, repeatable way (Infrastructure as Code).²¹

24. If a customer needs to audit the change management of AWS resources, which of the following AWS services should the customer use?

Answer: A. AWS Config

Explanation: AWS Config continuously monitors and records resource configurations, allowing customers to assess, audit, and evaluate changes over time.²²

25. What is Amazon CloudWatch?

Answer: B. A metrics repository with customizable notification thresholds and channels.

Explanation: Amazon CloudWatch is a monitoring service that collects metrics from AWS resources and applications, allowing users to set alarms with customizable notification thresholds.²³

26. Which service allows a company with multiple AWS accounts to combine its usage to obtain volume discounts?

Answer: B. AWS Organizations

Explanation: AWS Organizations features consolidated billing, which aggregates usage across multiple accounts to qualify for better volume discounts.²⁴

27. Which of the following services could be used to deploy an application to servers running on-premises? (Select TWO.)

Answer: B. AWS OpsWorks C. AWS CodeDeploy

Explanation: Both AWS OpsWorks (Chef/Puppet) and AWS CodeDeploy can automate the process of deploying applications to servers running on AWS and on-premises.²⁵

28. Which Amazon EC2 pricing model adjusts based on supply and demand of EC2 instances?

Answer: C. Spot Instances

Explanation: The price for Spot Instances is dynamic and changes frequently based on the real-time supply and demand for spare EC2 capacity.²⁶

29. Which design principles for cloud architecture are recommended when re-architecting a large monolithic application? (Select TWO.)

Answer: C. Implement loose coupling E. Design for scalability.

Explanation: Recommended principles include breaking down the application into independent, loosely coupled services and designing for scalability to handle growth gracefully.²⁷

30. Which is the MINIMUM AWS Support plan that allows for one-hour target response time for support cases?

Answer: B. Business

Explanation: The Business Support plan is the minimum tier that offers a one-hour target response time for impaired production systems.

31. Where can AWS compliance and certification reports be downloaded?

Answer: A. AWS Artifact

Explanation: AWS Artifact is the dedicated portal where customers can access and download compliance reports like SOC, PCI, and ISO certifications.²⁸

32. Which AWS service provides a customized view of the health of specific AWS services that power a customer's workloads running on AWS?

Answer: C. AWS Personal Health Dashboard

Explanation: The AWS Personal Health Dashboard provides alerts and remediation guidance when AWS services are experiencing events that may affect a customer's specific resources.²⁹

33. Which of the following is an advantage of consolidated billing on AWS?

Answer: A. Volume pricing qualification

Explanation: Consolidated billing aggregates usage across all linked accounts, which helps the entire organization achieve better volume pricing qualification and discounts.³⁰

34. Which of the following steps should be taken by a customer when conducting penetration testing on AWS?

Answer: D. Request and wait for approval from AWS support, and then conduct testing.

Explanation: While some services can be tested without prior notice, the formal and safest best practice is to request and receive approval from AWS before conducting penetration testing.

35. Which of the following AWS features enables a user to launch a pre-configured Amazon Elastic Compute Cloud (Amazon EC2) instance?

Answer: B. Amazon Machine Image

Explanation: An Amazon Machine Image (AMI) is a pre-configured template that contains the operating system and necessary software to launch an EC2 instance.³¹

36. How would an AWS customer easily apply common access controls to a large set of users?

Answer: A. Apply an IAM policy to an IAM group.

Explanation: By creating an IAM group and attaching an IAM policy to it, the customer can easily manage permissions for all users who belong to that group.³²

37. Which AWS Cost Management tool allows you to view the most granular data about your AWS bill?

Answer: C. AWS Cost and Usage report

Explanation: The AWS Cost and Usage Report (CUR) provides the most comprehensive and granular data about your AWS costs and usage.³³

38. Which of the following can an AWS customer use to launch a new Amazon Relational Database Service (Amazon RDS) cluster? (Select TWO.)

Answer: B. AWS CloudFormation E. AWS Management Console

Explanation: Resources can be provisioned via the web-based AWS Management Console (GUI) or through automation using AWS CloudFormation (Infrastructure as Code).³⁴

39. Which of the following is an AWS Cloud architecture design principle?

Answer: B. Implement loose coupling.

Explanation: Implementing loose coupling means designing services and components to operate independently, which increases resiliency and reduces the impact of component failures.³⁵

40. Which of the following security measures protect access to an AWS account? (Select TWO.)

Answer: B. Grant least privilege access to IAM users. E. Activate multi-factor authentication (MFA) for privileged users.³⁶

Explanation: Security best practices include granting only the minimum necessary permissions (least privilege) and enabling Multi-Factor Authentication (MFA) for all users, especially those with privileged access.³⁷

41. Which service provides a hybrid storage service that enables on-premises applications to seamlessly use cloud storage?

Answer: C. AWS Storage Gateway

Explanation: AWS Storage Gateway connects an on-premises software appliance to cloud-based storage, enabling seamless hybrid storage and data transfer.³⁸

42. Which of the following services falls under the responsibility of the customer to maintain operating system configuration, security patching, and networking?

Answer: B. Amazon EC2

Explanation: Amazon EC2 is IaaS, meaning the customer is responsible for managing the guest operating system, including configuration and security patching.³⁹

43. Which of the following is an important architectural design principle when designing cloud applications?

Answer: A. Use multiple Availability Zones.

Explanation: Using multiple Availability Zones is essential for high availability and fault tolerance, ensuring the application can withstand the failure of an entire data center.⁴⁰

44. Which AWS support plan includes a dedicated Technical Account Manager?

Answer: B. Enterprise

Explanation: A dedicated Technical Account Manager (TAM) is a feature exclusive to the Enterprise Support plan.⁴¹

45. Amazon Relational Database Service (Amazon RDS) offers which of the following benefits over traditional database management?

Answer: B. AWS manages the maintenance of the operating system.

Explanation: Amazon RDS is a managed service where AWS is responsible for managing the underlying operating system and database patching, freeing the customer from this administrative burden.⁴²

46. Which service is best for storing common database query results, which helps to alleviate database access load?

Answer: C. Amazon ElastiCache

Explanation: Amazon ElastiCache provides in-memory data store caching that can serve frequently requested database query results with low latency, reducing the load on the backend database.⁴³

47. Which of the following is a component of the shared responsibility model managed entirely by AWS?

Answer: D. Auditing physical data center assets

Explanation: AWS is solely responsible for the security of the cloud, which includes the physical infrastructure and the auditing of physical data center assets.

48. Which options does AWS make available for customers who want to learn about security in the cloud in an instructor-led setting? (Select TWO.)

Answer: B. AWS Online Tech Talks E. AWS Classroom Training

Explanation: AWS Online Tech Talks and AWS Classroom Training are both options for learning about AWS in a structured, instructor-led setting.⁴⁴

49. Which of the following features can be configured through the Amazon Virtual Private Cloud (Amazon VPC) Dashboard? (Select TWO.)

Answer: C. Security Groups D. Subnets

Explanation: The Amazon VPC console is where you define and configure your virtual network components, including Subnets and networking firewalls like Security Groups.

50. If each department within a company has its own AWS account, what is one way to enable consolidated billing?

Answer: C. Create an AWS Organization from the payer account and invite the other accounts to join.⁴⁵

Explanation: The master account of an AWS Organization can enable consolidated billing by inviting other individual accounts to join the Organization.⁴⁶

Practice Exam 15

1. How do customers benefit from Amazon's massive economies of scale?

Answer: A. Periodic price reductions as the result of Amazon's operational efficiencies

Explanation: **Economies of scale** allow AWS to achieve lower costs and pass those savings to customers in the form of **price reductions** (A).

2. Which AWS services can be used to gather information about AWS account activity? (Select TWO.)

Answer: C. AWS CloudTrail E. Amazon CloudWatch **Explanation:** **CloudTrail** logs all API calls and account actions, while **CloudWatch** monitors resource metrics and collects logs, both of which are used to gather information about account activity.

3. Which of the following common IT tasks can AWS cover to free up company IT resources? (Select TWO.)

Answer: A. Patching databases software C. Backing up databases **Explanation:** When using managed services like Amazon RDS, AWS is responsible for database-related **patching** (A) and **backup** (C), freeing up customer IT resources (Shared Responsibility Model).

4. In which scenario should Amazon EC2 Spot Instances be used?

Answer: D. A company has a number of infrequent, interruptible jobs that are currently using On-Demand Instances. **Explanation:** **Spot Instances** are for non-critical, **interruptible** workloads that have flexibility in when they run, making them highly cost-effective for **infrequent jobs** (D).

5. Which AWS feature should a customer leverage to achieve high availability of an application?

Answer: B. Availability Zones **Explanation:** **Availability Zones** are multiple, isolated locations within an AWS Region. Deploying an application across multiple AZs provides redundancy and **high availability**.

6. Which is the minimum AWS Support plan that includes Infrastructure Event Management without additional costs?

Answer: A. Enterprise **Explanation:** **Infrastructure Event Management** is a service included with the **Enterprise** Support plan (and available for a fee with the Business plan).

7. Which AWS service can serve a static website?

Answer: A. Amazon S3 **Explanation:** **Amazon S3** (Simple Storage Service) can be configured to host a **static website** (HTML, CSS, JavaScript files) directly from a bucket.

8. How does AWS shorten the time to provision IT resources?

Answer: C. It provides the ability to programmatically provision existing resources. **Explanation:** AWS services are accessible via APIs, enabling users to **programmatically provision** resources (e.g., using AWS CLI, SDKs, or infrastructure-as-code tools like CloudFormation) quickly.

9. What can AWS edge locations be used for? (Select TWO.)

Answer: B. Delivering content closer to users D. Reducing traffic on the server by caching responses **Explanation:** **Edge locations** are part of Amazon CloudFront and are used for **caching responses to deliver content closer to users**, reducing latency and offloading traffic from origin servers.

10. Which of the following can limit Amazon Simple Storage Service (Amazon S3) bucket access to specific users?

Answer: C. AWS Identity and Access Management (IAM) policies **Explanation:** **IAM policies** are the primary mechanism used to grant or restrict specific AWS users and roles from accessing S3 buckets.

11. A solution that is able to support growth in users, traffic, or data size with no drop in performance aligns with which cloud architecture principle?

Answer: B. Implement elasticity **Explanation:** **Elasticity** is the concept of automatically acquiring and disposing of computing resources as needed to precisely meet demand, ensuring performance does not drop during **growth** in users or traffic.

12. Which of the following tasks is the responsibility of AWS?

Answer: C. Securing the Amazon EC2 hypervisor **Explanation:** Under the Shared Responsibility Model, AWS is responsible for the **security of the cloud**, which includes securing the physical infrastructure and the **EC2 hypervisor**.

13. One benefit of On-Demand Amazon Elastic Compute Cloud (Amazon EC2) pricing is:

Answer: C. paying only for time used. **Explanation:** **On-Demand** pricing is characterized by paying for compute capacity by the hour or second, with **no upfront commitment** or long-term contract.

14. An administrator needs to rapidly deploy a popular IT solution and start using it immediately. Where can the administrator find assistance?

Answer: D. AWS Quick Start reference deployments **Explanation:** **AWS Quick Starts** are automated reference deployments built by AWS Solutions Architects and partners, designed to deploy popular enterprise solutions quickly and based on AWS best practices.

15. Which of the following services is in the category of AWS serverless platform?

Answer: C. AWS Lambda **Explanation:** **AWS Lambda** is the core serverless compute service, where the customer does not provision or manage any servers.

16. Which services are parts of the AWS serverless platform?

Answer: C. AWS Step Functions, Amazon DynamoDB, Amazon SNS **Explanation:** All three services—**Step Functions** (orchestration), **DynamoDB** (NoSQL database), and **SNS** (messaging)—are fully managed and operate without the need for server provisioning (serverless).

17. Under the shared responsibility model, which of the following is a shared control between a customer and AWS?

Answer: B. Patch management **Explanation:** **Patch management** is a **shared control**: AWS patches the underlying infrastructure/hypervisor, and the customer patches the guest OS and application software on EC2 instances.

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18. What can AWS edge locations be used for? (Select TWO.)

Answer: B. Delivering content closer to users D. Reducing traffic on the server by caching responses **Explanation:** **Edge locations** are used by CloudFront for content delivery, providing low latency by **caching responses** and **delivering content closer to users**.

19. What technology enables compute capacity to adjust as loads change?

Answer: D. Auto Scaling **Explanation:** **Auto Scaling** is the technology that automatically adjusts the number of compute resources (like EC2 instances) to handle changes in demand or load.

20. Which AWS services are defined as global instead of regional? (Select TWO.)

Answer: A. Amazon Route 53 D. Amazon CloudFront **Explanation:** **Route 53** (DNS) and **CloudFront** (CDN) are global services whose management applies across all AWS regions. Most other services, like EC2 and S3, are managed regionally.

21. Which AWS service would you use to obtain compliance reports and certificates?

Answer: A. AWS Artifact **Explanation:** **AWS Artifact** is the central, self-service portal for accessing official AWS security and **compliance documents and certificates** (e.g., SOC, PCI reports).

22. Under the shared responsibility model, which of the following tasks are the responsibility of the AWS customer? (Select TWO.)

Answer: A. Ensuring that application data is encrypted at rest C. Ensuring that users have received security training in the use of AWS services **Explanation:** The customer is responsible for **security in the cloud**, which includes data **encryption** (A) and their own employee **security awareness and training** (C).

23. Which AWS service can be used to manually launch instances based on resource requirements?

Answer: C. Amazon EC2 **Explanation:** **Amazon EC2** (Elastic Compute Cloud) provides virtual servers that users can **manually launch** and configure based on their needs.

24. A company is migrating an application that is running non-interruptible workloads for a three-year time frame. Which pricing construct would provide the MOST cost-effective solution?

Answer: D. Amazon EC2 Reserved Instances **Explanation:** **Reserved Instances (RIs)** offer a significant discount for a **non-interruptible** workload that has a long-term **(three-year)** commitment.

25. The financial benefits of using AWS are: (Select TWO.)

Answer: A. reduced Total Cost of Ownership (TCO). C. reduced operational expenditure (opex). **Explanation:** Moving to the cloud generally leads to a **reduced TCO** (A) by converting upfront capital expenses (CapEx) to variable **operational expenses (OpEx)** (C).

26. Which of the following is entirely the responsibility of AWS, according to the AWS shared responsibility model?

Answer: C. Physical and environmental controls **Explanation:** AWS is solely responsible for the **physical security** of its data centers and the underlying infrastructure, including **environmental controls** like cooling and power.

27. Which AWS service allows companies to connect an Amazon VPC to an on-premises data center? (Select TWO)

Answer: A. AWS VPN D. Amazon Direct Connect **Explanation:** Both **AWS VPN** (over the public internet) and **AWS Direct Connect** (a dedicated private line) can be used to connect a VPC to an on-premises data center.

28. A company wants to reduce the physical compute footprint that developers use to run code. Which service would meet that need by enabling serverless architectures?

Answer: B. AWS Lambda **Explanation:** **AWS Lambda** is the key service for building serverless architectures, entirely removing the need for developers to manage servers, thus **reducing the physical compute footprint**.

29. Which AWS service provides alerts when an AWS event may impact a company's AWS resources?

Answer: A. AWS Personal Health Dashboard **Explanation:** The **AWS Personal Health Dashboard** provides a personalized view of the status of AWS services, showing **alerts** and remediation guidance specific to a company's resources.

30. Which of the following are categories of AWS Trusted Advisor? (Select TWO.)

Answer: A. Fault Tolerance D. Performance **Explanation:** **AWS Trusted Advisor** provides guidance in five categories: Cost Optimization, Security, **Fault Tolerance**, **Performance**, and Service Limits.

31. Which of the following services falls under the responsibility of the customer to maintain operating system configuration, security patching, and networking?

Answer: B. Amazon EC2 **Explanation:** **Amazon EC2** is an Infrastructure-as-a-Service (IaaS) offering, where the customer is responsible for managing the guest **operating system** (including **patching** and **configuration**).

32. A company will be moving from an on-premises data center to the AWS Cloud. What would be one financial difference after the move?

Answer: C. Moving from upfront capital expense (capex) to variable operational expense (opex). **Explanation:** The primary financial shift is from the large upfront cost of buying hardware (**CapEx**) to paying only for resources as they are consumed (**variable OpEx**).

33. How should a customer forecast the future costs for running a new web application?

Answer: C. AWS Simple Monthly Calculator **Explanation:** The **AWS Simple Monthly Calculator** (now the AWS Pricing Calculator) is used to estimate and **forecast** the costs of running specific workloads on AWS.

34. Which is the MINIMUM AWS Support plan that provides technical support through phone calls?

Answer: B. Business **Explanation:** The **Business** Support plan is the minimum tier that offers 24/7 technical support via **phone**, **chat**, and email.

35. According to the AWS shared responsibility model, what is the sole responsibility of AWS?

Answer: B. Edge location management **Explanation:** **Edge locations** are part of the global infrastructure layer, which is entirely managed by AWS (security of the cloud).

36. Which AWS IAM feature is used to associate a set of permissions with multiple users?

Answer: B. Groups **Explanation:** **IAM Groups** are containers for multiple users, allowing administrators to attach a single set of **permissions** (policies) to the group, which all members inherit.

37. Which of the following are benefits of the AWS Cloud? (Choose two.)

Answer: B. Elasticity C. Agility **Explanation:** **Elasticity** (scaling with demand) and **Agility** (speed of deployment) are two core benefits of cloud computing.

38. Which of the following can a customer use to enable single sign-on (SSO) to the AWS Console?

Answer: B. AWS Directory Service **Explanation:** **AWS Directory Service** (e.g., AWS Managed Microsoft AD, Simple AD, or AWS SSO) allows users to log into the AWS Console using their existing corporate credentials, enabling **SSO**.

39. What are the multiple, isolated locations within an AWS Region that are connected by low-latency networks called?

Answer: D. Availability Zones **Explanation:** **Availability Zones (AZs)** are isolated data centers within a Region, connected by **low-latency** links, designed for high availability.

40. Which of the following benefits does the AWS Compliance program provide to AWS customers? (Choose two.)

Answer: B. AWS is responsible for the maintenance of common compliance framework documentation. C. It assures customers that AWS is maintaining physical security and data protection. **Explanation:** The Compliance program provides customers with the necessary **documentation** (B) and assurance that AWS is meeting its part of the shared responsibility model, specifically for **physical security and data protection** (C).

41. Which of the following services provides on-demand access to AWS compliance reports?

Answer: B. AWS Artifact **Explanation:** **AWS Artifact** is the dedicated portal for **on-demand access** to AWS compliance reports (e.g., SOC, PCI).

42. As part of the AWS shared responsibility model, which of the following operational controls do users fully inherit from AWS?

Answer: A. Security management of data center **Explanation:** Customers **fully inherit** the controls for the physical layer, such as **security management of the data center**, as this is entirely the responsibility of AWS.

43. When comparing AWS Cloud with on-premises Total Cost of Ownership, which expenses must be considered? (Choose two.)

Answer: C. Storage hardware D. Physical servers **Explanation:** A TCO analysis compares the cost of owning **physical servers** (D) and **storage hardware** (C) in a data center to the cost of using virtual resources on AWS.

44. Under the shared responsibility model, which of the following tasks are the responsibility of the customer? (Choose two.)

Answer: B. Managing the VPC network access control lists. C. Encrypting data in transit and at rest. **Explanation:** The customer manages their network security controls like **Network ACLs** (B). Data **encryption** (C) is a shared/customer responsibility for most services.

45. Which scenarios represent the concept of elasticity on AWS? (Choose two.)

Answer: A. Scaling the number of Amazon EC2 instances based on traffic. B. Resizing Amazon RDS instances as business needs change. **Explanation:** **Elasticity** is the ability to automatically **scale** resources (A) or **resize** resources (B) to meet fluctuating demand.

46. When is it beneficial for a company to use a Spot Instance?

Answer: A. When there is flexibility in when an application needs to run. **Explanation:** **Spot Instances** are suitable for applications that are **flexible** and can tolerate being interrupted or stopped, as they offer the deepest discount.

47. A company is considering moving its on-premises data center to AWS. What factors should be included in doing a Total Cost of Ownership (TCO) analysis? (Choose two.)

Answer: B. Power consumption of the data center C. Labor costs to replace old servers

Explanation: TCO should include non-hardware costs like **power consumption** (B) and data center **labor costs** (C) associated with managing physical infrastructure.

48. How does AWS charge for AWS Lambda?

Answer: D. Users pay based on the number of requests and consumed compute resources.

Explanation: Lambda uses a pay-per-use model: pricing is based on the **number of requests** and the **compute duration** (time * memory allocated).

49. What function do security groups serve related Amazon Elastic Compute Cloud (Amazon EC2) instance security?

Answer: A. Act as a virtual firewall for the Amazon EC2 instance. **Explanation:** A **Security Group** controls inbound and outbound traffic at the instance level and functions as a **virtual firewall**.

50. Which disaster recovery scenario offers the lowest probability of down time?

Answer: D. Multi-site active-active **Explanation:** The **Multi-site active-active** (or Hot Standby) strategy runs the application simultaneously in two or more locations, providing near-zero Recovery Time Objective (RTO) and the **lowest probability of down time**.

Practice Exam 16

1. What will help a company perform a cost benefit analysis of migrating to the AWS Cloud?

Answer: B. AWS Total Cost of Ownership (TCO) Calculator

Explanation: The AWS TCO Calculator is designed to help you compare the cost of running a workload on-premises versus on AWS, which is essential for a cost benefit analysis.

2. Which of the following provides the ability to share the cost benefits of Reserved Instances across AWS accounts?

Answer: B. Linked accounts and consolidated billing

Explanation: When accounts are linked under consolidated billing in AWS Organizations, the benefit of Reserved Instances is automatically shared and applied across all member accounts.¹

3. A company has multiple AWS accounts and wants to simplify and consolidate its billing process. Which AWS service will achieve this?

Answer: B. AWS Organizations

Explanation: AWS Organizations enables the consolidated billing feature, which allows you to receive a single bill and centralize cost management for multiple AWS accounts.²

4. A company is designing an application hosted in a single AWS Region serving end-users spread across the world. The company wants to provide the end-users low latency access to the application data. Which of the following services will help fulfill this requirement?

Answer: A. Amazon CloudFront

Explanation: Amazon CloudFront, a Content Delivery Network (CDN), uses a global network of edge locations to cache and deliver content closer to end-users for low latency access.³

5. Which of the following deployment models enables customers to fully trade their capital IT expenses for operational expenses?

Answer: C. Cloud

Explanation: The Cloud deployment model allows customers to shift from upfront capital expenditure (CapEx) for hardware to a flexible, operational expense (OpEx) pay-as-you-go model.⁴

6. How is asset management on AWS easier than asset management in a physical data center?

Answer: B. AWS performs infrastructure discovery scans on the customer's behalf.

Explanation: AWS manages the underlying cloud infrastructure (including discovery and tracking of assets), freeing the customer from this administrative burden.⁵

7. What feature of Amazon RDS helps to create globally redundant databases?

Answer: C. Cross-Region read replicas

Explanation: Cross-Region read replicas allow you to asynchronously copy data to a database in a different AWS Region, providing a foundation for globally redundant databases.⁶

8. Using AWS Identity and Access Management (IAM) to grant access only to the resources needed to perform a task is a concept known as:

Answer: C. least privilege access.

Explanation: Least privilege access is a security best practice that dictates you grant users only the minimum permissions required to perform their specific job function.⁷

9. Which methods can be used to identify AWS costs by departments? (Choose two.)

Answer: B. Create separate accounts for each department. D. Use tags to associate each instance with a particular department.

Explanation: Costs can be logically separated either by creating separate accounts (using AWS Organizations) or by applying cost allocation tags to resources.

10. Under the AWS shared responsibility model, customer responsibilities include which one of the following?

Answer: C. Configuring the operating system, network, and firewall.

Explanation: The customer is responsible for security in the cloud, which includes managing the guest operating system and setting up network controls like firewalls (Security Groups/Network ACLs).⁸

11. Which managed AWS service provides real-time guidance on AWS security best practices?

Answer: B. AWS Trusted Advisor

Explanation: AWS Trusted Advisor provides a dashboard with checks and real-time guidance to help optimize costs, performance, and security.⁹

12. Which feature adds elasticity to Amazon EC2 instances to handle the changing demand for workloads?

Answer: D. Amazon EC2 Auto Scaling

Explanation: Amazon EC2 Auto Scaling automatically adjusts the number of EC2 instances to match demand, providing elasticity to handle traffic fluctuations.¹⁰

13. Under the AWS shared responsibility model, customers are responsible for which aspects of security in the cloud? (Choose two.)

Answer: C. Encryption management E. Firewall management

Explanation: The customer is responsible for security in the cloud, which includes managing the encryption of their data and configuring network controls (firewalls / Security Groups).¹¹

14. Which AWS hybrid storage service enables on-premises applications to seamlessly use AWS Cloud storage through standard file-storage protocols?

Answer: C. AWS Storage Gateway

Explanation: AWS Storage Gateway is a hybrid service that links on-premises applications to cloud storage using common protocols.¹²

15. What is a responsibility of AWS in the shared responsibility model?

Answer: C. Updating the firmware on the underlying EC2 hosts.

Explanation: AWS is responsible for the security of the cloud, which includes maintaining the physical infrastructure and the hypervisor, such as updating the firmware on EC2 host servers.

16. Which architectural principle is used when deploying an Amazon Relational Database Service (Amazon RDS) instance in Multiple Availability Zone mode?

Answer: B. Design for failure.

Explanation: Deploying Amazon RDS across Multiple Availability Zones is an example of the Design for failure principle, which ensures service continuity during a single AZ outage.¹³

17. What does it mean to grant least privilege to AWS IAM users?

Answer: D. It is granting only the permissions required to perform a given task.

Explanation: The principle of least privilege is a security concept that limits access rights for users to exactly what is needed, and no more.¹⁴

18. What is a benefit of loose coupling as a principle of cloud architecture design?

Answer: C. It prevents cascading failures between different components.

Explanation: Loose coupling ensures that components operate independently, so the failure of one part is isolated and prevents cascading failures across the entire system.¹⁵

19. A director has been tasked with investigating hybrid cloud architecture. The company currently accesses AWS over the public internet. Which service will facilitate private hybrid connectivity?

Answer: B. AWS Direct Connect

Explanation: AWS Direct Connect provides a dedicated, private, physical connection from an on-premises data center to AWS, which is essential for private hybrid connectivity.¹⁶

20. A company's web application currently has tight dependencies on underlying components, so when one component fails the entire web application fails.

Applying which AWS Cloud design principle will address the current design issue?

Answer: C. Focusing on decoupling components by isolating them and ensuring individual components can function when other components fail.¹⁷

Explanation: The core principle is decoupling, or loose coupling, which isolates components so that a failure in one does not cause the entire application to crash.

21. How can a customer increase security to AWS account logons? (Choose two.)

Answer: B. Enable Multi-Factor Authentication (MFA) D. Configure a strong password policy

Explanation: Key steps to increase account logon security include enforcing a strong password policy and requiring Multi-Factor Authentication (MFA) for all users.¹⁸

22. What AWS service would be used to centrally manage AWS access across multiple accounts?

Answer: D. AWS Organizations

Explanation: AWS Organizations allows you to centrally manage and govern your environment by consolidating multiple AWS accounts.¹⁹

23. Which AWS service can a customer use to set up an alert notification when the account is approaching a particular dollar amount?

Answer: B. AWS Budgets

Explanation: AWS Budgets allows you to set custom cost and usage limits and configure alert notifications when actual or forecasted spending exceeds those limits.²⁰

24. What can users access from AWS Artifact?

Answer: A. AWS security and compliance documents

Explanation: AWS Artifact is the central repository for downloading official AWS security and compliance documents, such as SOC and PCI reports.²¹

25. Which is the MINIMUM AWS Support plan that provides designated Technical Account Managers?

Answer: A. Enterprise

Explanation: The Technical Account Manager (TAM) is an exclusive feature provided only with the Enterprise Support plan.

26. Which of the following is an AWS Well-Architected Framework design principle related to reliability?

Answer: B. Ability to recover from failure

Explanation: Reliability in the Well-Architected Framework includes the design principles of automatically recovering from failure and testing recovery procedures.²²

27. Which type of AWS storage is ephemeral and is deleted when an instance is stopped or terminated?

Answer: B. Amazon EC2 instance store

Explanation: Amazon EC2 instance store provides temporary, block-level storage for an instance; data on it is ephemeral and is lost when the instance is stopped or terminated.²³

28. What is an advantage of using the AWS Cloud over a traditional on-premises solution?

Answer: A. Users do not have to guess about future capacity needs.

Explanation: The cloud's elasticity means you can scale capacity up or down automatically, eliminating the need to guess about future capacity needs (a risk in on-premises solutions).

29. Which of the following is an AWS-managed compute service?

Answer: C. AWS Lambda

Explanation: AWS Lambda is a serverless, managed compute service that runs your code in response to events without requiring you to provision or manage servers.²⁴

30. Which of the following is an important architectural principle when designing cloud applications?

Answer: D. Design for failure

Explanation: Design for failure is a critical architectural principle that dictates you build redundant systems so that failure of a single component does not affect application availability.²⁵

31. Which mechanism allows developers to access AWS services from application code?

Answer: A. AWS Software Development Kit

Explanation: The AWS Software Development Kit (SDK) provides libraries in various programming languages that enable developers to interact with AWS services directly from their application code.²⁶

32. Which Amazon EC2 pricing model is the MOST cost efficient for an uninterruptible workload that runs once a year for 24 hours?

Answer: A. On-Demand Instances

Explanation: Since the workload is short-term (24 hours), On-Demand Instances are the most cost-efficient choice, as they require no upfront commitment and are billed by the hour or second.

33. Which of the following services is a MySQL-compatible database that automatically grows storage as needed?

Answer: D. Amazon Aurora

Explanation: Amazon Aurora is a high-performance, fully managed, MySQL-compatible database that is unique in its ability to automatically grow storage from 10 GB up to 128 TB as needed.²⁷

34. Which Amazon Virtual Private Cloud (Amazon VPC) feature enables users to connect two VPCs together?

Answer: C. Amazon VPC peering

Explanation: Amazon VPC peering creates a direct, private network connection between two VPCs, allowing instances in both to communicate as if they were on the same network.²⁸

35. Which service's PRIMARY purpose is software version control?

Answer: D. AWS CodeCommit

Explanation: AWS CodeCommit is a fully managed source control service that hosts secure, private Git repositories, making its primary purpose software version control.²⁹

36. A company is considering migrating its applications to AWS. The company wants to compare the cost of running the workload on-premises to running the equivalent workload on the AWS platform. Which tool can be used to perform this comparison?

Answer: B. AWS Total Cost of Ownership (TCO) Calculator

Explanation: The AWS TCO Calculator is the correct tool for performing a side-by-side comparison of on-premises vs. AWS cloud costs.

37. Which AWS service provides a secure, fast, and cost-effective way to migrate or transport exabyte-scale datasets into AWS?

Answer: D. AWS Snowmobile

Explanation: AWS Snowmobile is an exabyte-scale data transfer service that uses a massive, ruggedized shipping container pulled by a truck, designed for extremely large datasets.³⁰

38. Which of the following BEST describe the AWS pricing model? (Choose two.)

Answer: B. Pay-as-you-go E. Variable cost

Explanation: AWS uses a pay-as-you-go model, meaning you only pay for what you consume, which results in a variable cost based on usage.³¹

39. Which load balancer types are available with Elastic Load Balancing (ELB)? (Choose two.)

Answer: C. Classic Load Balancers E. Application Load Balancers

Explanation: Elastic Load Balancing supports three types: Application Load Balancers (ALB), Network Load Balancers (NLB), and Classic Load Balancers (CLB).

40. Why should a company choose AWS instead of a traditional data center?

Answer: B. AWS does not require long-term contracts and provides a pay-as-you-go model.³²

Explanation: A major advantage of AWS is the flexibility of the pay-as-you-go model, which does not require long-term contracts for standard services.³³

41. Which solution provides the FASTEST application response times to frequently accessed data to users in multiple AWS Regions?

Answer: B. Amazon CloudFront to edge locations

Explanation: Amazon CloudFront caches data at its global edge locations, delivering content geographically closest to users for the FASTEST application response times.³⁴

42. Which AWS service provides a self-service portal for on-demand access to AWS compliance reports?

Answer: D. AWS Artifact

Explanation: AWS Artifact is the web-based self-service portal for customers to download AWS security and compliance documentation.³⁵

43. Which of the following AWS services can be used to run a self-managed database?

Answer: D. Amazon Elastic Compute Cloud (Amazon EC2)

Explanation: Amazon EC2 provides the virtual machine infrastructure where a customer can install and run a self-managed database.

44. What exclusive benefit is provided to users with Enterprise Support?

Answer: B. Access to a Technical Account Manager

Explanation: A dedicated Technical Account Manager (TAM) is the key, exclusive benefit of the Enterprise Support plan.³⁶

45. How can a user protect against AWS service disruptions if a natural disaster affects an entire geographic area?

Answer: C. Deploy applications across multiple AWS Regions.

Explanation: To protect against a disaster affecting a large area, the highest level of protection is achieved by deploying application resources and data across multiple, geographically separate AWS Regions.³⁷

46. How does AWS MOST effectively reduce computing costs for a growing start-up company?

Answer: A. It provides on-demand resources for peak usage.³⁸

Explanation: AWS effectively reduces costs by providing on-demand resources, meaning the startup only pays for the capacity they actually use, which is critical for peak usage and managing growth.³⁹

47. A startup is working on a new application that needs to go to market quickly. The application requirements may need to be adjusted in the near future. Which of the following is a characteristic of the AWS Cloud that would meet this specific need?

Answer: D. Agility

Explanation: Agility refers to the ability to rapidly develop, test, and deploy new applications or adjust existing requirements quickly, which meets the startup's need to go to market quickly.⁴⁰

48. Which AWS Support plan provides a full set of AWS Trusted Advisor checks?

Answer: D. Enterprise and Business Support

Explanation: Only the Enterprise and Business Support plans provide access to the full set of AWS Trusted Advisor checks.⁴¹

49. Which of the following services have Distributed Denial of Service (DDoS) mitigation features? (Choose two.)

Answer: A. AWS WAF. D. Amazon CloudFront.

Explanation: Amazon CloudFront offers inherent protection, and AWS WAF (Web Application Firewall) can be used to actively mitigate DDoS attacks on web applications.⁴²

Practice Exam 17

1. What time-savings advantage is offered with the use of Amazon Rekognition?

Answer: B. Amazon Rekognition provides automatic detection of objects appearing in pictures.
Explanation: **Amazon Rekognition** is a deep learning-based image and video analysis service that provides **automatic detection** of objects, scenes, and faces, eliminating the need for manual analysis.

2. When comparing AWS with on-premises Total Cost of Ownership (TCO), what costs are included?

Answer: A. Data center security
Explanation: A TCO analysis compares cloud costs to all costs of an on-premises environment, which includes the **physical security** of the data center, which is a significant CapEx/OpEx item.

3. According to the AWS shared responsibility model, what is AWS responsible for?

Answer: D. Managing the network infrastructure
Explanation: AWS is responsible for the **security of the cloud**, which includes the physical infrastructure, network infrastructure, hardware, and hypervisor.

4. Which service should be used to estimate the costs of running a new project on AWS?

Answer: C. AWS Cost Explorer API **Explanation:** The **AWS Cost Explorer** (or the AWS Pricing Calculator for new projects) is used to analyze current usage and **estimate/forecast** future costs. The API allows for programmatic access to this data.

5. Which AWS tool will identify security groups that grant unrestricted Internet access to a limited list of ports?

Answer: B. AWS Trusted Advisor **Explanation:** **AWS Trusted Advisor** performs automated checks on security, cost optimization, performance, fault tolerance, and service limits. It includes checks for misconfigured **security groups** (e.g., unrestricted access 0.0.0.0/0).

6. Which AWS service can be used to generate alerts based on an estimated monthly bill?

Answer: B. Amazon CloudWatch **Explanation:** You can create **Amazon CloudWatch** alarms based on billing metrics to trigger **alerts** (via Amazon SNS) when estimated charges exceed a defined threshold.

7. Which Amazon EC2 pricing model offers the MOST significant discount when compared to On-Demand Instances?

Answer: C. All Upfront Reserved Instances for a 3-year term **Explanation:** The deepest discounts are achieved with the longest commitment (**3-year term**) and the highest upfront payment (**All Upfront**).

8. Which of the following is the responsibility of AWS?

Answer: B. Physically destroying storage media at end of life **Explanation:** Under the Shared Responsibility Model, AWS is responsible for the decommissioning of storage devices, including **physically destroying storage media** according to NIST standards.

9. Which of the following is an advantage of using AWS?

Answer: C. There is no guessing on capacity needs. **Explanation:** Cloud **elasticity** eliminates the need for manual capacity planning or **guessing capacity needs** (also known as "undifferentiated heavy lifting").

10. Which AWS service would a customer use with a static website to achieve lower latency and high transfer speeds?

Answer: D. Amazon CloudFront **Explanation:** **Amazon CloudFront** is a Content Delivery Network (CDN) that uses a global network of edge locations to **cache static content** and deliver it to users with **lower latency** and high speeds.

11. Which services manage and automate application deployments on AWS? (Choose two.)

Answer: A. AWS Elastic Beanstalk D. AWS CloudFormation **Explanation:** **AWS Elastic Beanstalk** (A) automates deployment, scaling, and provisioning. **AWS CloudFormation** (D) automates the provisioning and management of infrastructure as code.

12. A user wants guidance on possible savings when migrating from on-premises to AWS. Which tool is suitable for this scenario?

Answer: C. AWS Total Cost of Ownership (TCO) Calculator **Explanation:** The **AWS TCO Calculator** is specifically designed to provide a comparison of the costs of running an on-premises data center versus hosting the same workload on AWS, identifying **possible savings**.

13. Which principles are used to architect applications for reliability on the AWS Cloud? (Choose two.)

Answer: A. Design for automated failure recovery B. Use multiple Availability Zones **Explanation:** **Reliability** is achieved by spreading resources across **multiple Availability Zones** (B) to prevent single-point failures and by designing systems to detect and **automatically recover from failure** (A).

14. What tasks should a customer perform when that customer suspects an AWS account has been compromised? (Choose two.)

Answer: A. Rotate passwords and access keys. E. Contact AWS Support. **Explanation:** The immediate steps are to stop the intrusion by **rotating credentials** (A) (passwords and access keys) and **contacting AWS Support** (E) immediately to report the compromise and get assistance.

15. What is an example of high availability in the AWS Cloud?

Answer: B. Ensuring an application remains accessible, even if a resource fails **Explanation:** **High availability** means deploying an application with enough redundancy (e.g., across multiple Availability Zones) so that it **remains accessible** and operational despite a component **failure**.

16. Which AWS security service protects applications from distributed denial of service attacks with always-on detection and automatic inline mitigations?

Answer: D. AWS Shield **Explanation:** **AWS Shield** is the managed DDoS (Distributed Denial of Service) protection service that offers **always-on detection** and **automatic inline mitigations**.

17. A company wants to monitor the CPU usage of its Amazon EC2 resources. Which AWS service should the company use?

Answer: B. Amazon CloudWatch **Explanation:** **Amazon CloudWatch** is the primary monitoring service that collects metric data, such as **CPU usage** for EC2 instances, and provides visualization and alarming.

18. What is an AWS Identity and Access Management (IAM) role?

Answer: C. An entity that defines a set of permissions for use with an AWS resource **Explanation:** An **IAM Role** is a secure **entity** that has specific **permissions** but is not permanently associated with a single user or group. It is assumed by AWS services or users to gain temporary access to resources.

19. What are the advantages of Reserved Instances? (Choose two.)

Answer: A. They provide a discount over on-demand pricing. E. Customers can reserve capacity in an Availability Zone. **Explanation:** **Reserved Instances** provide significant cost **discounts** (A) and, optionally, offer the ability to **reserve capacity** (E) in a specific Availability Zone.

20. How do Amazon EC2 Auto Scaling groups help achieve high availability for a web application?

Answer: B. They automatically add or replace instances across multiple Availability Zones when the application needs it. **Explanation:** **Auto Scaling Groups** ensure **high availability** by automatically replacing unhealthy instances and by launching new instances **across multiple Availability Zones** to handle increased load or failure.

21. How can one AWS account use Reserved Instances from another AWS account?

Answer: B. By using AWS Organizations consolidated billing **Explanation:** When accounts are linked using **Consolidated Billing** under **AWS Organizations**, the billing system automatically applies the cost benefit of an unutilized Reserved Instance from one account to the matching usage in another account.

22. A customer runs an On-Demand Amazon Linux EC2 instance for 3 hours, 5 minutes, and 6 seconds. For how much time will the customer be billed?

Answer: B. 3 hours, 5 minutes, and 6 seconds **Explanation:** Linux On-Demand EC2 instances are billed per **second** after the first hour. Therefore, the customer is billed for the exact duration of use.

23. Which of the following AWS services provide compute resources? (Choose two.)

Answer: A. AWS Lambda B. Amazon Elastic Container Service (Amazon ECS) **Explanation:** **AWS Lambda** provides serverless compute, and **Amazon ECS** is a container orchestration service that manages the underlying compute infrastructure for running containers.

24. Which AWS service enables users to deploy infrastructure as code by automating the process of provisioning resources?

Answer: B. AWS CloudFormation **Explanation:** **AWS CloudFormation** is an infrastructure-as-code service that uses templates to **automate the provisioning** and management of AWS resources.

25. Which AWS services provide a way to extend an on-premises architecture to the AWS Cloud? (Choose two.)

Answer: B. AWS Direct Connect D. AWS Storage Gateway **Explanation:** **AWS Direct Connect** provides a dedicated network link, and **AWS Storage Gateway** allows hybrid storage architectures that **extend on-premises** storage to the AWS Cloud.

26. Which of the following allows users to provision a dedicated network connection from their internal network to AWS?

Answer: B. AWS Direct Connect **Explanation:** **AWS Direct Connect** establishes a **dedicated, private** network connection between the user's data center and an AWS Direct Connect location.

27. Which services use AWS edge locations? (Choose two.)

Answer: A. Amazon CloudFront B. AWS Shield **Explanation:** **Amazon CloudFront** uses edge locations to cache and deliver content. **AWS Shield** uses edge locations to protect against DDoS attacks close to the user.

28. Which service would provide network connectivity in a hybrid architecture that includes the AWS Cloud?

Answer: A. Amazon VPC **Explanation:** The **Amazon VPC** (Virtual Private Cloud) is the foundational networking service in AWS that provides the virtual data center environment to which on-premises resources connect.

29. Which tool can be used to compare the costs of running a web application in a traditional hosting environment to running it on AWS?

Answer: D. AWS Total Cost of Ownership (TCO) Calculator **Explanation:** The **AWS TCO Calculator** is the correct tool for comparing the overall **costs** of an on-premises environment to the AWS Cloud.

30. What is the value of using third-party software from AWS Marketplace instead of installing third-party software on Amazon EC2? (Choose two.)

Answer: A. Users pay for software by the hour or month depending on licensing. B. AWS Marketplace enables the user to launch applications with 1-Click. **Explanation:** **AWS Marketplace** simplifies deployment with **1-Click** launch (B) and provides flexible **pay-as-you-go** pricing for software (A).

31. Which of the following is a cloud architectural design principle?

Answer: B. Loosely couple components. **Explanation:** A core design principle for highly available and resilient cloud applications is to **loosely couple components** so that a failure in one part does not cascade to others.

32. Under the shared responsibility model; which of the following areas are the customer's responsibility? (Choose two.)

Answer: B. Patching of operating systems E. Configuration of the security group **Explanation:** The customer is responsible for **security in the cloud**, which includes **patching the guest OS** (B) and configuring network security tools like **security groups** (E).

33. Which service enables customers to audit and monitor changes in AWS resources?

Answer: D. AWS Config **Explanation:** **AWS Config** continuously records and **monitors changes** to AWS resource configurations, enabling auditing, governance, and compliance.

34. Which AWS service identifies security groups that allow unrestricted access to a user's AWS resources?

Answer: B. AWS Trusted Advisor **Explanation:** **AWS Trusted Advisor** performs checks for common security misconfigurations, including overly permissive security groups.

35. According to the AWS shared responsibility model, who is responsible for configuration management?

Answer: C. It is shared between AWS and the customer. **Explanation:** **Configuration management** is a **shared** control. AWS manages the configuration of the infrastructure, while the customer is responsible for the configuration of their guest OS, applications, and databases.

36. Which AWS service is a content delivery network that securely delivers data, video, and applications to users globally with low latency and high speeds?

Answer: C. Amazon CloudFront **Explanation:** **Amazon CloudFront** is the name of the AWS **Content Delivery Network (CDN)** service.

37. Which benefit of the AWS Cloud supports matching the supply of resources with changing workload demands?

Answer: C. Elasticity **Explanation:** **Elasticity** is the ability of a system to grow or shrink capacity automatically to meet **changing workload demands**.

38. A user is running an application on AWS and notices that one or more AWS-owned IP addresses is involved in a distributed denial-of-service (DDoS) attack. Who should the user contact FIRST about this situation?

Answer: D. AWS Abuse team **Explanation:** Any malicious or abusive behavior originating from an AWS resource (like a DDoS attack) should be reported to the **AWS Abuse team**.

39. Which of the following are benefits of hosting infrastructure in the AWS Cloud? (Choose two.)

Answer: A. There are no upfront commitments. C. Users have the ability to provision resources on demand. **Explanation:** Benefits include the **on-demand provisioning** (C) and the pay-as-you-go model with **no upfront commitments** (A).

40. What AWS service would be used to centrally manage AWS access policies across multiple accounts?

Answer: D. AWS Organizations **Explanation:** **AWS Organizations** provides central governance and management for multiple AWS accounts, including the ability to apply access policies (Service Control Policies) across the entire organization.

41. What is AWS Trusted Advisor?

Answer: C. It is an online tool with a set of automated checks that provides recommendations on cost optimization, performance, and security. **Explanation:** **AWS Trusted Advisor** is an **online tool** that acts as an automated consultant, providing best-practice recommendations in five categories.

42. Which AWS service or feature allows a company to visualize, understand, and manage AWS costs and usage over time?

Answer: B. AWS Cost Explorer **Explanation:** **AWS Cost Explorer** is the primary tool for analyzing and visualizing past and forecasted AWS **costs and usage**.

43. Which AWS service offers on-demand access to AWS security and compliance reports?

Answer: B. AWS Artifact **Explanation:** **AWS Artifact** is the central repository for **on-demand access** to compliance and security reports.

44. What are the benefits of using the AWS Cloud for companies with customers in many countries around the world? (Choose two.)

Answer: A. Companies can deploy applications in multiple AWS Regions to reduce latency. C. Amazon CloudFront has multiple edge locations around the world to reduce latency. **Explanation:** Both deploying in **multiple Regions** (A) and using **Amazon CloudFront's edge locations** (C) help **reduce latency** for global customers.

45. Which AWS service handles the deployment details of capacity provisioning, load balancing, Auto Scaling, and application health monitoring?

Answer: B. AWS Elastic Beanstalk **Explanation:** **AWS Elastic Beanstalk** is an easy-to-use orchestration service that handles all the details of deployment, including **capacity provisioning, load balancing, and Auto Scaling**.

46. Which AWS service provides inbound and outbound network ACLs to harden external connectivity to Amazon EC2?

Answer: C. Amazon VPC **Explanation:** **Network ACLs (Access Control Lists)** are configured within the **Amazon VPC** to control traffic at the subnet level.

47. When a company provisions web servers in multiple AWS Regions, what is being increased?

Answer: B. Availability **Explanation:** Deploying across **multiple Regions** increases both disaster recovery capability and the application's overall **availability**.

48. The pay-as-you-go pricing model for AWS services:

Answer: A. reduces capital expenditures. **Explanation:** The **pay-as-you-go** model converts large upfront **capital expenditures (CapEx)** for hardware into variable operational expenses (OpEx).

49. Under the AWS shared responsibility model, AWS is responsible for which security-related task?

Answer: B. Physical security of global infrastructure **Explanation:** AWS is solely responsible for the **physical security** of its data centers and global infrastructure (**security of the cloud**).

50. Which AWS service enables users to consolidate billing across multiple accounts?

Answer: B. AWS Organizations **Explanation:** **AWS Organizations** provides the feature of **consolidated billing**, which aggregates charges from multiple accounts into a single bill.

Practice Exam 18

1. Under the AWS shared responsibility model, which of the following is an example of security in the AWS Cloud?

Answer: C. Firewall configuration **Explanation:** **Security in the cloud** refers to the customer's responsibility for securing their resources, which includes setting up **firewall configuration** (like Security Groups and Network ACLs).

2. How can an AWS user with an AWS Basic Support plan obtain technical assistance from AWS?

Answer: D. AWS Discussion Forums **Explanation:** The **Basic Support** plan offers access to documentation, whitepapers, and the **AWS Discussion Forums**. Technical support for specific resources (via chat, email, or phone) requires a paid support plan (Developer, Business, or Enterprise).

3. Which of the following are pillars of the AWS Well-Architected Framework? (Choose two.)

Answer: B. Performance efficiency C. Security **Explanation:** The five pillars of the AWS Well-Architected Framework are Operational Excellence, **Security**, **Performance Efficiency**, Cost Optimization, and Reliability.

4. After selecting an Amazon EC2 Dedicated Host reservation, which pricing option would provide the largest discount?

Answer: D. All upfront payment **Explanation:** Similar to Reserved Instances, committing to the longest term (usually 3 years) and making the largest initial payment (**All upfront**) yields the **largest discount**.

5. What is an advantage of deploying an application across multiple Availability Zones?

Answer: B. The application will have higher availability because it can withstand a service disruption in one Availability Zone. **Explanation:** Availability Zones (AZs) are physically isolated. Deploying across multiple AZs ensures that a failure or disruption in one AZ will not take down the entire application, resulting in **higher availability**.

6. A Cloud Practitioner is asked how to estimate the cost of using a new application on AWS. What is the MOST appropriate response?

Answer: B. Direct the user to the AWS Simple Monthly Calculator for an estimate.

Explanation: The **AWS Simple Monthly Calculator** (now the AWS Pricing Calculator) is the appropriate tool for a user to **estimate the cost** of a new application or workload on AWS.

7. A company wants to migrate its applications to a VPC on AWS. These applications will need to access on-premises resources. What combination of actions will enable the company to accomplish this goal? (Choose two.)

Answer: B. Build a VPN connection between an on-premises device and a virtual private gateway in the new VPC. D. Connect the company's on-premises data center to AWS using AWS Direct Connect. **Explanation:** Hybrid connectivity is achieved using either a **VPN connection** (B) (site-to-site VPN) or a dedicated, private connection via **AWS Direct Connect** (D).

8. A web application running on AWS has been spammed with malicious requests from a recurring set of IP addresses. Which AWS service can help secure the application and block the malicious traffic?

Answer: D. AWS WAF **Explanation:** **AWS WAF** (Web Application Firewall) allows users to create rules based on conditions like specific IP addresses to **block malicious traffic** targeted at web applications.

9. Treating infrastructure as code in the AWS Cloud allows users to:

Answer: D. automate the infrastructure provisioning process. **Explanation:** **Infrastructure as Code (IaC)** is the process of managing and **provisioning** infrastructure through code and templates (e.g., AWS CloudFormation), which naturally **automates** the setup.

10. A company requires a dedicated network connection between its on-premises servers and the AWS Cloud. Which AWS service should be used?

Answer: B. AWS Direct Connect **Explanation:** **AWS Direct Connect** provides a private, **dedicated network connection** from an on-premises data center to AWS, bypassing the public internet.

11. Which AWS service can be used to query stored datasets directly from Amazon S3 using standard SQL?

Answer: D. Amazon Athena **Explanation:** **Amazon Athena** is an interactive query service that makes it easy to analyze data residing in Amazon S3 using **standard SQL**.

12. AWS CloudFormation is designed to help the user:

Answer: A. model and provision resources. **Explanation:** **AWS CloudFormation** allows users to define infrastructure resources in a template (**model**) and automatically **provision** them across accounts and regions.

13. Which of the following is an AWS database service?

Answer: A. Amazon Redshift **Explanation:** Amazon Redshift is AWS's petabyte-scale cloud data warehousing service, which is a specialized type of **database service**.

14. A Cloud Practitioner must determine if any security groups in an AWS account have been provisioned to allow unrestricted access for specific ports. What is the SIMPLEST way to do this?

Answer: B. Run AWS Trusted Advisor and review the findings. **Explanation:** AWS Trusted Advisor provides automated checks and identifies common security flaws, such as permissive inbound rules (e.g., 0.0.0.0/0 access to ports), making it the **simplest** method.

15. What are the benefits of developing and running a new application in the AWS Cloud compared to on-premises? (Choose two.)

Answer: C. AWS makes it easy to architect for high availability. D. AWS can easily accommodate application demand changes. **Explanation:** AWS provides native services and features (like Auto Scaling and Multi-AZ deployments) that simplify achieving **high availability** (C) and enable **elasticity** to accommodate **demand changes** (D).

16. A user needs an automated security assessment report that will identify unintended network access to Amazon EC2 instances and vulnerabilities on those instances. Which AWS service will provide this assessment report?

Answer: D. Amazon Inspector **Explanation:** Amazon Inspector is an automated security assessment service that evaluates applications for **vulnerabilities** and deviations from best practices, providing a detailed **assessment report**.

17. How can a company isolate the costs of production and non-production workloads on AWS?

Answer: B. Use different accounts for production and non-production expenses. **Explanation:** The best practice for **isolating costs** and security is to use separate **AWS accounts** for distinct environments (e.g., Production vs. Non-Production). **AWS Organizations** can then consolidate the billing.

18. Where can users find a catalog of AWS-recognized providers of third-party security solutions?

Answer: B. AWS Marketplace **Explanation:** The **AWS Marketplace** is a digital catalog where users can find, buy, and deploy software (including **third-party security solutions**) that runs on AWS.

19. A Cloud Practitioner needs to store data for 7 years to meet regulatory requirements. Which AWS service will meet this requirement at the LOWEST cost?

Answer: D. Amazon S3 Glacier **Explanation:** **Amazon S3 Glacier** (specifically Glacier Deep Archive) is the **lowest-cost** storage class designed for long-term data archival and retention, often used to meet regulatory requirements for 7-10 years or longer.

20. What are the immediate benefits of using the AWS Cloud? (Choose two.)

Answer: B. Capital expenses are replaced with variable expenses. D. Increased agility.

Explanation: Cloud benefits include replacing **CapEx with variable OpEx** (B) and enabling rapid resource deployment, leading to **increased agility** (D).

21. Which security service automatically recognizes and classifies sensitive data or intellectual property on AWS?

Answer: B. Amazon Macie **Explanation:** **Amazon Macie** is a data security and privacy service that uses machine learning to **discover, classify, and protect sensitive data** like Personally Identifiable Information (PII) or intellectual property.

22. What is the purpose of AWS Storage Gateway?

Answer: D. It connects on-premises data storage to the AWS Cloud. **Explanation:** **AWS Storage Gateway** is a hybrid storage service that creates a bridge, enabling on-premises applications to use cloud storage (S3, Glacier, EBS snapshots) through standard storage protocols.

23. What should users do if they want to install an application in geographically isolated locations?

Answer: C. Deploy the application to multiple AWS Regions. **Explanation:** **AWS Regions** are geographically separated areas. To deploy an application in **geographically isolated locations** for disaster recovery or global latency reduction, you must use **multiple Regions**.

24. A system in the AWS Cloud is designed to withstand the failure of one or more components. What is this an example of?

Answer: B. High Availability **Explanation:** **High Availability** is the principle of designing a system to minimize downtime by eliminating single points of failure, enabling it to **withstand component failures**.

25. A Cloud Practitioner needs a consistent and dedicated connection between AWS resources and an on-premises system. Which AWS service can fulfill this requirement?

Answer: A. AWS Direct Connect **Explanation:** **AWS Direct Connect** provides a **dedicated, consistent** network connection between an on-premises system and AWS.

26. Within the AWS shared responsibility model, who is responsible for security and compliance?

Answer: C. AWS and the customer share responsibility. **Explanation:** **Security and Compliance** is explicitly a **shared responsibility** between AWS (security *of* the cloud) and the customer (security *in* the cloud).

27. To use the AWS CLI, users are required to generate:

Answer: B. an access/secret key. **Explanation:** The **AWS CLI** (Command Line Interface) requires programmatic credentials, which are an **Access Key ID** and a **Secret Access Key**.

28. Which AWS service is used to provide encryption for Amazon EBS?

Answer: C. AWS KMS **Explanation:** **AWS KMS** (Key Management Service) is used to create and manage the encryption keys used for encrypting services like **Amazon EBS** volumes.

29. How does AWS charge for AWS Lambda usage once the free tier has been exceeded? (Choose two.)

Answer: A. By the time it takes for the Lambda function to execute. C. By the number of requests made for a given Lambda function. **Explanation:** AWS Lambda pricing is based on two factors: the **number of requests** (invocations) (C) and the **duration** (compute time) (A), measured in milliseconds.

30. Which of the following describes the relationships among AWS Regions, Availability Zones, and edge locations? (Choose two.)

Answer: B. There are more edge locations than AWS Regions. E. There are more Availability Zones than AWS Regions. **Explanation:** A **Region** contains multiple **Availability Zones** (AZs), so there are more AZs than Regions (E). There are hundreds of **edge locations** globally, used by services like CloudFront, meaning there are more edge locations than Regions (B).

31. What does AWS Shield Standard provide?

Answer: B. DDoS protection **Explanation:** **AWS Shield** is the managed Distributed Denial of Service (**DDoS**) protection service. Shield Standard is automatically included for all AWS customers at no extra cost.

32. A company wants to build its new application workloads in the AWS Cloud instead of using on-premises resources. What expense can be reduced using the AWS Cloud?

Answer: C. hardware required to support new applications **Explanation:** By moving to the cloud, the company eliminates the need to purchase and maintain **hardware required to support new applications**, significantly reducing capital expenditure.

33. What does AWS Marketplace allow users to do? (Choose two.)

Answer: B. Sell solutions to other AWS users. C. Buy third-party software that runs on AWS. **Explanation:** **AWS Marketplace** is a digital catalog where users can **buy third-party software** (C) and where vendors can **sell their solutions** (B).

34. What does it mean if a user deploys a hybrid cloud architecture on AWS?

Answer: D. Some resources run on-premises and some run in the AWS Cloud. **Explanation:** A **hybrid cloud** is an IT environment that combines and manages resources running in both an **on-premises data center** and the **AWS Cloud**.

35. Which AWS service allows users to identify the changes made to a resource over time?

Answer: B. AWS Config **Explanation:** **AWS Config** continuously monitors and records the configuration of AWS resources, enabling users to track and **identify the changes made to a resource over time**.

36. How can a company reduce its Total Cost of Ownership (TCO) using AWS?

Answer: A. By minimizing large capital expenditures **Explanation:** AWS reduces **TCO** by converting large upfront **capital expenditures (CapEx)** for hardware purchases into flexible, usage-based variable expenses (OpEx).

37. Which activity is a customer responsibility in the AWS Cloud according to the AWS shared responsibility model?

Answer: D. Ensuring Amazon EBS volumes are backed up **Explanation:** The customer is responsible for managing their data, which includes setting up processes for **ensuring EBS volumes are backed up** (e.g., using snapshots).

38. What are the advantages of the AWS Cloud? (Choose two.)

Answer: B. No need to guess capacity requirements C. Increased speed to market **Explanation:** Cloud benefits include **elasticity** (B) and the ability to provision resources quickly, leading to **increased speed to market** (C).

39. When comparing the total cost of ownership (TCO) of an on-premises infrastructure to a cloud architecture, what costs should be considered? (Choose two.)

Answer: B. The cost of purchasing and installing server hardware in the on-premises data. C. The cost of administering the infrastructure, including operating system and software installations, patches, backups, and recovering from failures. **Explanation:** TCO must account for both the **CapEx** of **purchasing hardware** (B) and the **OpEx** of **administering the infrastructure** (C).

40. Which AWS feature allows a company to take advantage of usage tiers for services across multiple member accounts?

Answer: B. Consolidated billing **Explanation:** **Consolidated billing** aggregates usage across multiple linked accounts. This enables the entire organization to benefit from volume discounts and service usage **tiers** as if it were a single account.

41. What is one of the customer's responsibilities according to the AWS shared responsibility model?

Answer: C. Application security **Explanation:** The customer is solely responsible for **security in the cloud**, which includes securing their **application code** and runtime environment (**Application security**).

42. What helps a company provide a lower latency experience to its users globally?

Answer: D. Using edge locations to put content closer to all users **Explanation:** **Edge locations**, part of Amazon CloudFront, cache content geographically **closer to users** to deliver data with the lowest possible latency.

43. How can the AWS Cloud increase user workforce productivity after migration from an on-premises data center?

Answer: A. Users do not have to wait for infrastructure provisioning. **Explanation:** The ability to provision resources instantly and programmatically means **users do not have to wait** for hardware acquisition and setup, significantly boosting **productivity** (agility).

44. Which AWS service provides a quick and automated way to create and manage AWS accounts?

Answer: C. AWS Organizations **Explanation:** **AWS Organizations** is used to centrally **create and manage** multiple AWS accounts, often programmatically.

45. Which Amazon RDS feature can be used to achieve high availability?

Answer: A. Multiple Availability Zones **Explanation:** Deploying an Amazon RDS instance in a **Multi-AZ (Multiple Availability Zones)** configuration automatically creates a synchronized standby replica, providing **high availability** and automated failover.

46. Where should users report that AWS resources are being used for malicious purposes?

Answer: A. AWS Abuse team **Explanation:** Any suspected use of AWS resources for abusive or malicious activities (e.g., spam, illegal content, port scanning) must be reported to the **AWS Abuse team**.

47. Which AWS service needs to be enabled to track all user account changes within the AWS Management Console?

Answer: A. AWS CloudTrail **Explanation:** **AWS CloudTrail** logs all API calls, actions, and events, including those made through the **AWS Management Console**, providing an audit trail of user account changes.

48. What is an AWS Cloud design best practice?

Answer: C. High availability **Explanation:** **High availability** is one of the core principles and design best practices in the AWS Well-Architected Framework (Reliability pillar).

49. Why is AWS more economical than traditional data centers for applications with varying compute workloads?

Answer: C. Amazon EC2 instances can be launched on-demand when needed. **Explanation:** The ability to launch and terminate resources **on-demand** means customers only pay for the

capacity they use, avoiding the need to over-provision and run expensive idle capacity for peak loads.

50. Which AWS service would simplify migration of a database to AWS?

Answer: B. AWS Database Migration Service (AWS DMS) **Explanation:** **AWS DMS** (Database Migration Service) is specifically designed to simplify, automate, and accelerate the **migration of databases** to AWS.

Practice Exam 19

1. Which AWS offering enables customers to find, buy, and immediately start using software solutions in their AWS environment?

Answer: D. AWS Marketplace **Explanation:** The **AWS Marketplace** is a curated digital catalog where customers can **find, buy, and deploy** third-party software and data solutions.

2. Which AWS networking service enables a company to create a virtual network within AWS?

Answer: D. Amazon Virtual Private Cloud (Amazon VPC) **Explanation:** **Amazon VPC** is the service that lets you provision a logically isolated section of the AWS Cloud where you can **create a virtual network** and launch AWS resources.

3. Which of the following is AWS's responsibility under the AWS shared responsibility model?

Answer: B. Maintaining physical hardware **Explanation:** AWS is responsible for the **security of the cloud**, which includes the foundational infrastructure, such as **maintaining physical hardware**, the global network, and the hypervisor.

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4. Which component of AWS global infrastructure does Amazon CloudFront use to ensure low-latency delivery?

Answer: B. AWS edge locations **Explanation:** **Amazon CloudFront** is a Content Delivery Network (CDN) that uses a worldwide network of **AWS edge locations** to cache content closer to end-users for **low-latency delivery**.

5. How would a system administrator add an additional layer of login security to a user's AWS Management Console?

Answer: C. Enable Multi-Factor Authentication **Explanation:** **Multi-Factor Authentication (MFA)** adds a required second factor (a code from a separate device) beyond the standard username and password, significantly enhancing **login security**.

6. Which service can identify the user that made the API call when an Amazon Elastic Compute Cloud (Amazon EC2) instance is terminated?

Answer: B. AWS CloudTrail **Explanation:** **AWS CloudTrail** records all API calls (actions) made by a user, service, or role, including details like the **user identity** and the action taken (e.g., terminating an EC2 instance).

7. Which service would you use to send alerts based on Amazon CloudWatch alarms?

Answer: A. Amazon Simple Notification Service (Amazon SNS) **Explanation:** **Amazon SNS** is the messaging service commonly used to send notifications or **alerts** (via email, SMS, etc.) when an event like an **Amazon CloudWatch alarm** is triggered.

8. Where can a customer find information about prohibited actions on AWS infrastructure?

Answer: D. AWS Acceptable Use Policy **Explanation:** The **AWS Acceptable Use Policy (AUP)** outlines the guidelines and restrictions concerning the usage of AWS services and infrastructure, listing **prohibited actions**.

9. Which of the following is an example of how moving to the AWS Cloud reduces upfront cost?

Answer: B. By replacing large capital investments with lower variable costs **Explanation:** The cloud model replaces large, upfront **capital investments (CapEx)** for hardware with flexible, usage-based, **lower variable costs (OpEx)**.

10. When designing a typical three-tier web application, which AWS services and/or features improve availability and reduce the impact failures? (Choose two.)

Answer: A. AWS Auto Scaling for Amazon EC2 instances C. Distributed resources across multiple Availability Zones **Explanation:** **Availability** is improved by distributing resources across **multiple Availability Zones** (C) and using **AWS Auto Scaling** (A) to automatically replace failed instances and scale capacity.

11. Which cloud design principle aligns with AWS Cloud best practices?

Answer: D. Distribute the compute load across multiple resources **Explanation:** A key cloud best practice is to **distribute the compute load** (often using load balancers) across multiple resources to ensure scalability, fault tolerance, and **High Availability**.

12. Which of the following are recommended practices for managing IAM users? (Choose two.)

Answer: A. Require IAM users to change their passwords after a specified period of time B. Prevent IAM users from reusing previous passwords **Explanation:** Strong **password policies** for IAM users include requiring periodic password changes (A) and preventing reuse of past passwords (B).

13. A company is migrating from on-premises data centers to the AWS Cloud and is looking for hands-on help with the project. How can the company get this support? (Choose two.)

Answer: C. Use AWS Professional Services to provide guidance and to set up an AWS Landing Zone in the company's AWS account D. Select a partner from the AWS Partner Network (APN) to assist with the migration **Explanation:** For **hands-on help** and expertise, a company can engage **AWS Professional Services** (C) or utilize the skills of certified partners from the **AWS Partner Network (APN)** (D).

14. How does the AWS Enterprise Support Concierge team help users?

Answer: C. Answering billing and account inquiries **Explanation:** The **Concierge team** is a specialized function within **Enterprise Support** that assists users with **billing and account inquiries**, distinct from technical or architectural support.

15. An application designed to span multiple Availability Zones is described as:

Answer: A. being highly available **Explanation:** Spreading an application across multiple, isolated **Availability Zones** is the primary method to achieve fault tolerance and ensure the application is **highly available**.

16. A new service using AWS must be highly available. Yet, due to regulatory requirements, all of its Amazon EC2 instances must be located in a single geographic area. According to best practices, to meet these requirements, the EC2 instances must be placed in at least two:

Answer: B. Availability Zones **Explanation:** To achieve **high availability** within a **single geographic area** (Region), resources must be deployed across at least two **Availability Zones** (AZs), as AZs are physically separated but within the same Region.

17. Which AWS tool is used to compare the cost of running an application on-premises to running the application in the AWS Cloud?

Answer: C. AWS Pricing Calculator **Explanation:** The **AWS Pricing Calculator** (formerly TCO Calculator) is used to estimate and **compare the cost** of an on-premises workload versus running it on AWS.

18. A company has multiple AWS accounts within AWS Organizations and wants to apply the Amazon EC2 Reserved Instances benefit to a single account only. Which action should be taken?

Answer: A. Purchase the Reserved Instances from master payer account and turn off Reserved Instance sharing. **Explanation:** To prevent sharing, the organization needs to explicitly **turn off Reserved Instance sharing** on the master/payer account and then purchase the RIs. If purchased by the linked account, they will be shared by default.

19. Which situation should be reported to the AWS Abuse team?

Answer: B. An intrusion attempt is made from an AWS IP address **Explanation:** Any malicious or abusive behavior originating from an **AWS IP address**, such as an **intrusion attempt**, should be immediately reported to the **AWS Abuse team**.

20. A company is planning to launch an ecommerce site in a single AWS Region to a worldwide user base. Which AWS services will allow the company to reach users and provide low latency and high transfer speeds? (Choose two.)

Answer: B. AWS Global Accelerator D. Amazon CloudFront **Explanation:** To serve a **worldwide user base** with **low latency** from a single Region, you should use **Amazon CloudFront** (D) for caching and **AWS Global Accelerator** (B) to direct traffic through the optimized AWS global network.

21. Which AWS service or resource is serverless?

Answer: A. AWS Lambda **Explanation:** **AWS Lambda** is a serverless compute service where you don't manage any servers; you upload code, and AWS handles the provisioning, scaling, and administration.

22. Which of the following are components of Amazon VPC? (Choose two.)

Answer: B. Subnets D. Internet gateways **Explanation:** A **VPC** (Virtual Private Cloud) consists of networking components like **Subnets** (B) to segment the network and **Internet Gateways** (D) to allow internet access.

23. AWS Budgets can be used to:

Answer: C. set resource limits in AWS accounts to prevent overspending **Explanation:** **AWS Budgets** allows users to set custom budgets (cost, usage, utilization) and define **alerts** when those thresholds are approached or exceeded, helping to **prevent overspending**.

24. Which of the following will enhance the security of access to the AWS Management Console? (Choose two.)

Answer: C. AWS Multi-Factor Authentication (AWS MFA) E. Password policies **Explanation:** Enforcing strong **Password policies** (E) and enabling **AWS MFA** (C) are two critical best practices for enhancing the security of the AWS Management Console login.

25. The AWS Trusted Advisor checks include recommendations regarding which of the following? (Choose two.)

Answer: A. Information on Amazon S3 bucket permissions C. Multi-factor authentication enabled on the AWS account root user **Explanation:** **AWS Trusted Advisor** includes security checks for overly permissive **S3 bucket permissions** (A) and verifying if **MFA is enabled on the root user** (C).

26. Which functions can users perform using AWS KMS?

Answer: C. Create and manage keys for encryption and decryption of data **Explanation:** **AWS KMS** (Key Management Service) is a managed service that allows you to **create and control the encryption keys** used to cryptographically protect your data.

27. How does AWS Trusted Advisor provide guidance to users of the AWS Cloud? (Choose two.)

Answer: B. It provides a list of cost optimization recommendations based on current AWS usage C. It detects potential security vulnerabilities caused by permissions settings on account resources **Explanation:** **Trusted Advisor** performs automated checks to identify opportunities for **cost optimization** (B) and to find **potential security vulnerabilities** (C).

28. Which of the following are advantages of the AWS Cloud? (Choose two.)

Answer: A. AWS manages the maintenance of the cloud infrastructure C. AWS manages capacity planning for physical servers **Explanation:** Advantages include that **AWS manages the maintenance** of the underlying infrastructure (A) and handles **capacity planning for physical servers** (C) so the customer doesn't have to.

29. A user deploys an Amazon RDS DB instance in multiple Availability Zones. This strategy involves which pillar of the AWS Well-Architected Framework?

Answer: B. Reliability **Explanation:** Deploying resources across **multiple Availability Zones** (Multi-AZ) to withstand failures is a core principle of the **Reliability** pillar.

30. Which AWS services provide a user with connectivity between the AWS Cloud and on-premises resources? (Choose two.)

Answer: A. AWS VPN D. AWS Direct Connect **Explanation:** Both **AWS VPN** (A) (encrypted connection over the public internet) and **AWS Direct Connect** (D) (dedicated private connection) are used to establish hybrid **connectivity** to on-premises resources.

31. Which AWS service is used to pay AWS bills, and monitor usage and budget costs?

Answer: A. AWS Billing and Cost Management **Explanation:** The **AWS Billing and Cost Management** console is the central place to view and pay bills, monitor usage, and manage cost controls.

32. Which element of the AWS global infrastructure consists of one or more discrete data centers, each with redundant power, networking, and connectivity, which are housed in separate facilities?

Answer: B. Availability Zones **Explanation:** This definition precisely describes an **Availability Zone** (AZ), which is a single, isolated location within a Region.

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Explore

33. Which Amazon VPC feature enables users to capture information about the IP traffic that reaches Amazon EC2 instances?

Answer: D. VPC Flow Logs **Explanation:** **VPC Flow Logs** are a feature that **captures information** about the inbound and outbound **IP traffic** for network interfaces within your VPC.

34. Which AWS service can be used to automatically scale an application up and down without making capacity planning decisions?

Answer: A. Amazon AutoScaling **Explanation:** **Amazon Auto Scaling** (now AWS Auto Scaling) enables applications to automatically **scale capacity up or down** in response to traffic or load, removing the need for manual capacity decisions.

35. AWS Enterprise Support users have access to which service or feature that is not available to users with other AWS Support plans?

Answer: C. Concierge team **Explanation:** The **Concierge team** is a unique feature reserved for the **Enterprise Support** plan, offering specialized help with billing and account matters.

36. A company wants to migrate a MySQL database to AWS but does not have the budget for Database Administrators to handle routine tasks including provisioning, patching, and performing backups. Which AWS service will support this use case?

Answer: A. Amazon RDS **Explanation:** **Amazon RDS** (Relational Database Service) is a managed service that automates and handles routine database tasks such as **provisioning, patching, and backups**, reducing the need for extensive DBA oversight.

33. A company wants to expand from one AWS Region into a second AWS Region. What does the company need to do to start supporting the new Region?

Answer: C. Begin deploying resources in the second Region **Explanation:** AWS Regions are independent. To start using a new Region, a company simply needs to select the Region in the console (or API) and **begin deploying resources** there. No new contract or special activation is required.

38. A user must meet compliance and software licensing requirements that state a workload must be hosted on a physical server. Which Amazon EC2 instance pricing option will meet these requirements?

Answer: A. Dedicated Hosts **Explanation:** **Dedicated Hosts** is an Amazon EC2 purchasing option that provides an entire **physical server** for your EC2 instance use, necessary for meeting specific regulatory or licensing requirements.

39. Which AWS service will provide a way to generate encryption keys that can be used to encrypt data? (Choose two.)

Answer: C. AWS Key Management Service (AWS KMS) E. AWS CloudHSM **Explanation:** **AWS KMS** (C) is a managed service for creating and controlling keys. **AWS CloudHSM** (E) is a

dedicated hardware appliance for generating and storing keys, both of which are used for data encryption.

40. A company is planning to migrate from on-premises to the AWS Cloud. Which AWS tool or service provides detailed reports on estimated cost savings after migration?

Answer: A. AWS Total Cost of Ownership (TCO) Calculator **Explanation:** The **AWS TCO Calculator** is designed to compare the costs of running on-premises versus on AWS and generate reports detailing **estimated cost savings**.

41. What can assist in evaluating an application for migration to the cloud? (Choose two.)

Answer: B. AWS Professional Services D. AWS Partner Network (APN) **Explanation:** **AWS Professional Services** (B) and experienced partners from the **AWS Partner Network (APN)** (D) provide the expertise and guidance necessary to properly **evaluate an application for cloud migration**.

42. Which AWS service helps users meet contractual and regulatory compliance requirements for data security by using dedicated hardware appliances within the AWS Cloud?

Answer: B. AWS CloudHSM **Explanation:** **AWS CloudHSM** (Hardware Security Module) provides **dedicated hardware appliances** that meet strict compliance standards for managing and storing cryptographic keys, essential for specific regulatory requirements.

43. Under the AWS shared responsibility model, the customer manages which of the following? (Choose two.)

Answer: B. Security group and ACL configuration E. Patch management of an Amazon EC2 instance operating system **Explanation:** The customer manages **security in the cloud**, including network security configuration like **Security Groups and ACLs** (B) and the **patch management** of the guest OS on an **EC2 instance** (E).

44. Which AWS service is suitable for an event-driven workload?

Answer: C. AWS Lambda **Explanation:** **AWS Lambda** is an excellent choice for **event-driven workloads** as it executes code only in response to events (e.g., a file upload, database change, or API call) without managing servers.

45. What is a value proposition of the AWS Cloud?

Answer: B. No long-term contract is required **Explanation:** A major value proposition is the ability to pay-as-you-go, meaning **no long-term contract is required** for most services, providing financial flexibility.

46. What is a characteristic of Amazon S3 cross-region replication?

Answer: C. S3 buckets configured for cross-region replication can be owned by a single AWS account or by different accounts **Explanation:** S3 **Cross-Region Replication** is a feature that supports replication to a destination bucket that can be owned by either the **same AWS account or a different account**.

47. What is a user responsible for when running an application in the AWS Cloud?

Answer: D. Managing application software updates **Explanation:** The customer is responsible for **security in the cloud**, which includes all aspects of the application, such as **managing application software updates**.

48. A company that does business online needs to quickly deliver new functionality in an iterative manner, minimizing the time to market. Which AWS Cloud feature can provide this?

Answer: C. Agility **Explanation:** **Agility** is the characteristic of the cloud that allows companies to rapidly provision and decommission resources, enabling them to innovate, experiment, and **quickly deliver new functionality**.

49. Which features or services can be used to monitor costs and expenses for an AWS account? (Choose two.)

Answer: A. AWS Cost and Usage report D. Billing alerts and Amazon CloudWatch alarms **Explanation:** The **AWS Cost and Usage report** (A) provides detailed cost data, and **Billing alerts** configured with **Amazon CloudWatch alarms** (D) monitor and notify when costs exceed defined thresholds.

50. Amazon Route 53 enables users to:

Answer: B. register DNS domain names **Explanation:** **Amazon Route 53** is a highly available and scalable cloud DNS (Domain Name System) web service that includes the ability to **register domain names**.

Practice Exam 20

1. Which AWS service helps identify malicious or unauthorized activities in AWS accounts and workloads?

Answer: C. Amazon GuardDuty **Explanation:** **Amazon GuardDuty** is a threat detection service that continuously monitors for **malicious or unauthorized activities** and generates detailed security findings for your AWS accounts and workloads.

2. A company wants to try a third-party ecommerce solution before deciding to use it long term. Which AWS service or tool will support this effort?

Answer: A. AWS Marketplace **Explanation:** The **AWS Marketplace** allows customers to **find, buy, and immediately start using** third-party software (including trials) in their AWS environment.

3. Which AWS service is a managed NoSQL database?

Answer: B. Amazon DynamoDB **Explanation:** **Amazon DynamoDB** is AWS's key-value and document database service, which is a fully **managed NoSQL database**.

4. Which AWS service should be used to create a billing alarm?

Answer: C. Amazon CloudWatch **Explanation:** **Amazon CloudWatch** is the monitoring service used to track metrics, and specifically, to create **billing alarms** based on estimated charges.

5. A company is hosting a web application in a Docker container on Amazon EC2. AWS is responsible for which of the following tasks?

Answer: C. Performing hardware maintenance in the AWS facilities that run the AWS Cloud
Explanation: Under the shared responsibility model, AWS is responsible for the security of the cloud, which includes the physical security and **hardware maintenance** of the global infrastructure.

6. Users are reporting latency when connecting to a website with a global customer base. Which AWS service will improve the customer experience by reducing latency?

Answer: A. Amazon CloudFront **Explanation:** **Amazon CloudFront** is a Content Delivery Network (CDN) that uses edge locations to cache content close to users, drastically **reducing latency** for a global customer base.

7. Which actions represent best practices for using AWS IAM? (Choose two.)

Answer: A. Configure a strong password policy D. Rotate access keys on a regular basis
Explanation: IAM best practices include enforcing a **strong password policy** (A) for human users and **rotating access keys** (D) frequently for programmatic users.

8. Which AWS feature or service can be used to capture information about incoming and outgoing traffic in an AWS VPC infrastructure?

Answer: B. VPC Flow Logs **Explanation:** **VPC Flow Logs** are specifically designed to **capture information about the IP traffic** that passes through a network interface within a VPC.

9. A company wants to use an AWS service to monitor the health of application endpoints, with the ability to route traffic to healthy regional endpoints to improve application availability. Which service will support these requirements?

Answer: C. AWS Global Accelerator **Explanation:** **AWS Global Accelerator** uses the AWS global network to intelligently route user traffic to the closest **healthy regional endpoint**, which improves availability and performance.

10. According to the AWS Well-Architected Framework, what change management steps should be taken to achieve reliability in the AWS Cloud? (Choose two.)

Answer: A. Use AWS Config to generate an inventory of AWS resources C. Use AWS CloudTrail to record AWS API calls into an auditable log file
Explanation: The Reliability pillar includes the principle of change management. **AWS Config** (A) helps manage configuration changes, and **AWS CloudTrail** (C) provides the audit trail of all API activity, allowing you to trace changes.

11. Which service can be used to monitor and receive alerts for AWS account root user AWS Management Console sign-in events?

Answer: A. Amazon CloudWatch **Explanation:** **Amazon CloudWatch** can be configured to monitor the logs captured by CloudTrail for a specific event (like the root user sign-in) and trigger an **alert** (via an SNS topic).

12. Which design principle should be considered when architecting in the AWS Cloud?

Answer: C. Design loosely coupled components **Explanation:** A fundamental design principle in the AWS Well-Architected Framework is to **design loosely coupled components** (microservices) so that the failure of one component does not cascade through the entire application.

13. Which AWS services can be used to move data from on-premises data centers to AWS? (Choose two.)

Answer: A. AWS Snowball D. AWS Database Migration Service (AWS DMS) **Explanation:** **AWS Snowball** (A) is used for large-scale, physical data transfer, and **AWS DMS** (D) is used for migrating databases. Both are methods for **moving data from on-premises to AWS**.

14. A batch workload takes 5 hours to finish on an Amazon EC2 instance. The amount of data to be processed doubles monthly and the processing time is proportional. What is the best cloud architecture to address this consistently growing demand?

Answer: C. Distribute the application across multiple EC2 instances and run the workload in parallel. **Explanation:** Since the workload is growing proportionally, the most scalable and efficient approach is to use **parallel processing (horizontal scaling)** by distributing the application across **multiple EC2 instances**.

15. Each department within a company has its own independent AWS account and its own payment method. New company leadership wants to centralize departmental governance and consolidate payments. How can this be achieved using AWS services or features?

Answer: B. Create a new AWS account. Then configure AWS Organizations and invite all existing accounts to join. **Explanation:** **AWS Organizations** is the service used to manage multiple accounts, centralize **governance** (via SCPs), and **consolidate billing** (payments) by inviting existing accounts to join a new organization.

16. The ability to horizontally scale Amazon EC2 instances based on demand is an example of which concept in the AWS Cloud value proposition?

Answer: B. Elasticity **Explanation:** **Elasticity** is the ability to automatically acquire compute resources when they are needed and release them when they are not, enabling resources to **scale based on demand**.

17. An ecommerce company anticipates a huge increase in web traffic for two very popular upcoming shopping holidays. Which AWS service or feature can be configured to dynamically adjust resources to meet this change in demand?

Answer: B. Amazon EC2 Auto Scaling **Explanation:** **Amazon EC2 Auto Scaling** is the service that can be configured to automatically **dynamically adjust** the number of EC2 instances (resources) based on monitored metrics to handle changes in demand.

18. Which AWS service enables users to securely connect to AWS resources over the public internet?

Answer: C. AWS VPN **Explanation:** **AWS VPN** (Virtual Private Network) uses encryption protocols to create a **secure connection** over the **public internet** between a user's network and AWS.

19. Which tool is used to forecast AWS spending?

Answer: C. Cost Explorer **Explanation:** **Cost Explorer** is the AWS tool that allows you to visualize, understand, and **forecast your AWS spending** over time.

20. A company is running an ecommerce application hosted in Europe. To decrease latency for users who access the website from other parts of the world, the company would like to cache frequently accessed static content closer to the users. Which AWS service will support these requirements?

Answer: B. Amazon CloudFront **Explanation:** **Amazon CloudFront** is the Content Delivery Network (CDN) that uses a global network of edge locations to **cache static content closer to users** to **decrease latency**.

21. Which of the following is a component of the AWS Global Infrastructure?

Answer: B. AWS Regions **Explanation:** The core components of the **AWS Global Infrastructure** are **AWS Regions**, Availability Zones, and Edge Locations.

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22. Which AWS service will help users determine if an application running on an Amazon EC2 instance has sufficient CPU capacity?

Answer: A. Amazon CloudWatch **Explanation:** **Amazon CloudWatch** collects metrics on AWS resources, including the **CPU utilization** of an EC2 instance, allowing users to determine if the instance has **sufficient CPU capacity**.

23. Why is it beneficial to use Elastic Load Balancers with applications?

Answer: B. They are capable of handling constant changes in network traffic patterns. **Explanation:** **Elastic Load Balancers (ELB)** automatically distribute incoming application traffic across multiple targets and are designed to seamlessly scale to handle **constant changes in network traffic patterns**.

24. Which tasks are the customer's responsibility in the AWS shared responsibility model? (Choose two.)

Answer: C. Configuration management of user's applications E. Security groups configuration **Explanation:** The customer is responsible for **security in the cloud**, which includes all application settings (C) and network configuration tools like **Security Groups** (E).

25. IT systems should be designed to reduce interdependencies, so that a change or failure in one component does not cascade to other components. This is an example of which principle of cloud architecture design?

Answer: B. Loose coupling **Explanation:** **Loose coupling** is the design principle of reducing dependencies between components so that a change or failure in one does not affect the others.

26. Which AWS service or feature can enhance network security by blocking requests from a particular network for a web application on AWS? (Choose two.)

Answer: A. AWS WAF E. Network ACLs **Explanation:** Both **AWS WAF** (A) (for Layer 7 web traffic) and **Network ACLs** (E) (for Layer 4 subnet traffic) can be configured with rules to **block requests from a particular network** (IP range).

27. An application runs on multiple Amazon EC2 instances that access a shared file system simultaneously. Which AWS storage service should be used?

Answer: B. Amazon EFS **Explanation:** **Amazon EFS** (Elastic File System) is a scalable, elastic **file system** that can be mounted by **multiple Amazon EC2 instances simultaneously**.

28. A web application is hosted on AWS using an Elastic Load Balancer, multiple Amazon EC2 instances, and Amazon RDS. Which security measures fall under the responsibility of AWS? (Choose two.)

Answer: B. Protecting against IP spoofing and packet sniffing C. Installing the latest security patches on the RDS instance **Explanation:** AWS is responsible for the **security of the cloud**, which includes network infrastructure protections like **guarding against IP spoofing** (B) and managing the underlying OS/software for managed services like **patching the RDS instance** (C).

29. What is the benefit of elasticity in the AWS Cloud?

Answer: D. Automatically adjust the required compute capacity to maintain consistent performance. **Explanation:** **Elasticity** is the cloud's ability to **automatically adjust compute capacity** (scale out/in) to handle fluctuations in demand while **maintaining consistent performance**.

30. The continual reduction of AWS Cloud pricing is due to:

Answer: C. economies of scale **Explanation:** AWS benefits from massive **economies of scale** by purchasing and managing hardware for millions of customers, allowing them to pass on savings through **continually reducing prices**.

31. A company needs an Amazon S3 bucket that cannot have any public objects due to compliance requirements. How can this be accomplished?

Answer: A. Enable S3 Block Public Access from the AWS Management Console. **Explanation:** **S3 Block Public Access** is the simplest and most effective way to ensure an S3 bucket and its objects **cannot be made public**, regardless of future bucket or object policy changes.

32. A Cloud Practitioner identifies a billing issue after examining the AWS Cost and Usage report in the AWS Management Console. Which action can be taken to resolve this?

Answer: A. Open a detailed case related to billing and submit it to AWS Support for help. **Explanation:** For issues related to **billing** or invoices, the most appropriate action is to **open a support case with AWS Support**, specifically under the "Billing and Account Support" category.

33. What does the AWS Simple Monthly Calculator do?

Answer: B. Estimates monthly billing based on projected usage **Explanation:** The AWS Simple Monthly Calculator (now AWS Pricing Calculator) is a free tool used to **estimate monthly billing** by entering **projected usage** of AWS services.

34. Who is responsible for patching the guest operating system for Amazon RDS?

Answer: B. The customer Database Administrator **Explanation:** **Amazon RDS** is a managed database. AWS is responsible for patching the underlying host OS and database software, but the **customer** retains responsibility for tasks like schema and application patching. (However, for *RDS*, AWS is responsible for *OS patching*. The correct answer, based on the provided key, aligns with a common misconception in the exam context that for managed services like RDS, the customer still handles *some* patching. In the real world and in more precise exam questions, AWS handles the RDS OS and DB engine patching. Given the provided correct answer is B, the question is flawed or targets customer tasks *related* to the database, but in the context of the available options, **B (The customer Database Administrator)** is the intended answer for the *exam context*, suggesting customer responsibility for application/schema-level maintenance). **Revising based on the official explanation:** In the shared responsibility model, AWS manages the underlying OS/patching for RDS. The explanation linked is generic. Since the correct answer is B, this question likely intends to test the concept that the **customer is responsible for the database configuration, schema, and data**, and sometimes the exam incorrectly attributes parts of the OS/DB patching to the customer. We will stick to the provided correct answer.

35. Which AWS services may be scaled using AWS Auto Scaling? (Choose two.)

Answer: A. Amazon EC2 B. Amazon DynamoDB **Explanation:** **AWS Auto Scaling** can scale multiple services. It natively integrates to scale **Amazon EC2** (A) and **Amazon DynamoDB** (B) (via DynamoDB Auto Scaling).

36. Which of the following are benefits of AWS Global Accelerator? (Choose two.)

Answer: B. Improved availability of applications deployed on AWS D. Decreased latency to reach applications deployed on AWS **Explanation:** **AWS Global Accelerator** routes traffic through the optimized AWS network, resulting in **decreased latency** (D), and continuously monitors endpoints, automatically rerouting traffic to healthy ones for **improved availability** (B).

37. A user who wants to get help with billing and reactivate a suspended account should submit an account and billing request to:

Answer: D. AWS Support **Explanation:** All inquiries regarding **billing** and **account status** (like reactivation) must be submitted to **AWS Support**.

38. Which AWS Cloud best practice uses the elasticity and agility of cloud computing?

Answer: B. Dynamically and predictively scale to meet usage demands **Explanation:** The practice of **dynamically and predictively scaling** resources embodies both **elasticity** (scaling capacity) and **agility** (responding quickly to demand).

39. Which method helps to optimize costs of users moving to the AWS Cloud?

Answer: A. Paying only for what is used **Explanation:** The fundamental cost-optimization method of the AWS Cloud is the pay-as-you-go model, which means **paying only for the services and resources that are actually used**.

40. Under the AWS shared responsibility model, which of the following is a customer responsibility?

Answer: C. Installing operating system security patches for Amazon EC2 database instances **Explanation:** For **Amazon EC2** (even if running a database), the customer is responsible for the guest operating system, including **installing OS security patches**.

41. The AWS Cost Management tools give users the ability to do which of the following? (Choose two.)

Answer: B. Break down AWS costs by day, service, and linked AWS account. C. Create budgets and receive notifications if current or forecasted usage exceeds the budgets. **Explanation:** **AWS Cost Management tools** (like Cost Explorer and Cost and Usage Report) allow users to **break down costs** by various dimensions (B) and use **AWS Budgets to create budgets and notifications** (C).

42. Under the AWS shared responsibility model, the security and patching of the guest operating system is the responsibility of:

Answer: B. the customer **Explanation:** For an IaaS service like Amazon EC2, the **customer** is responsible for the security and **patching of the guest operating system**.

43. Which AWS service makes it easy to create and manage AWS users and groups, and provide them with secure access to AWS resources at no charge?

Answer: C. AWS Identity and Access Management (IAM) **Explanation:** **AWS Identity and Access Management (IAM)** is the service used to **create and manage users and groups** and secure access to AWS resources. It is offered at **no charge**.

44. Which AWS service provides on-demand of AWS security and compliance documentation?

Answer: B. AWS Artifact **Explanation:** **AWS Artifact** is the go-to resource for **on-demand access to AWS security and compliance documentation** and agreements.

45. Which AWS service can be used to turn text into life-like speech?

Answer: A. Amazon Polly **Explanation:** **Amazon Polly** is a Text-to-Speech (TTS) service that uses deep learning to **turn text into life-like speech**.

46. What is one of the core principles to follow when designing a highly available application in the AWS Cloud?

Answer: B. Assume that all components within an application can fail **Explanation:** The core principle of designing for high availability is to **assume that all components can fail** (often called "design for failure") and build redundancy and automatic recovery mechanisms.

47. A user needs to generate a report that outlines the status of key security checks in an AWS account. The report must include: (The status of Amazon S3 bucket permissions, Whether multi-factor authentication is enabled for the AWS account root user, If any security groups are configured to allow unrestricted access.) Where can all this information be found in one location?

Answer: C. AWS Trusted Advisor report **Explanation:** The **AWS Trusted Advisor report** is the one location that consolidates checks on cost optimization, performance, service limits, and **key security checks**, including S3 permissions and root user MFA.

48. Which Amazon EC2 pricing model should be used to comply with per-core software license requirements?

Answer: A. Dedicated Hosts **Explanation:** **Dedicated Hosts** is the EC2 pricing model that provides access to the underlying physical server, which is often required for **per-core software license requirements**.

49. Which of the AWS global infrastructure is used to cache copies of content for faster delivery to users across the globe?

Answer: C. Edge locations **Explanation:** **Edge locations** (used by Amazon CloudFront) are utilized to **cache copies of content** close to users, enabling **faster delivery** and lower latency.

50. Using AWS Config to record, audit, and evaluate changes to AWS resources to enable traceability is an example of which AWS Well-Architected Framework pillar?

Answer: B. Operational excellence **Explanation:** **Operational Excellence** includes the principle of performing operations as code, which involves defining and automating changes and maintaining **traceability** of those changes (using services like AWS Config and CloudTrail).

Practice Exam 21

1. A user needs to quickly deploy a non-relational database on AWS. The user does not want to manage the underlying hardware or the database software. Which AWS service can be used to accomplish this?

Answer: B. Amazon DynamoDB **Explanation:** **Amazon DynamoDB** is a fully managed, serverless, **NoSQL (non-relational) database** service. This means AWS handles all underlying hardware, operating system, and database software management.

2. A Cloud Practitioner is developing a disaster recovery plan and intends to replicate data between multiple geographic areas. Which of the following meets these requirements?

Answer: B. AWS Regions **Explanation:** **AWS Regions** are isolated **geographic areas**. Replicating data and resources between separate Regions is the standard practice for a robust disaster recovery plan.

3. Which features and benefits does the AWS Organizations service provide? (Choose two.)

Answer: D. Implementing consolidated billing E. Enforcing the governance of AWS accounts
Explanation: **AWS Organizations** allows you to centrally manage multiple AWS accounts, providing the benefits of **consolidated billing** (D) and centralized **governance** using Service Control Policies (SCPs) (E).

4. Which AWS service is used to automate configuration management using Chef and Puppet?

Answer: B. AWS OpsWorks **Explanation:** **AWS OpsWorks** is a configuration management service that provides managed instances of **Chef** and **Puppet**, allowing users to automate configuration management tasks.

5. Which tool is best suited for combining the billing of AWS accounts that were previously independent from one another?

Answer: B. Consolidated billing **Explanation:** **Consolidated billing** (a feature of AWS Organizations) is specifically designed to combine the costs of multiple AWS accounts into a single payment.

6. The AWS Total Cost of Ownership (TCO) Calculator is used to:

Answer: B. estimate savings when comparing the AWS Cloud to an on-premises environment **Explanation:** The **AWS TCO Calculator** is a free tool used to **compare the costs** of running infrastructure on-premises versus on AWS and estimate the **potential savings**.

7. Which AWS services can be used to provide network connectivity between an on-premises network and a VPC? (Choose two.)

Answer: B. AWS Direct Connect D. AWS VPN **Explanation:** **AWS Direct Connect** (B) provides a dedicated private physical connection, and **AWS VPN** (D) provides a secure, encrypted connection over the public internet. Both connect an **on-premises network to an AWS VPC**.

8. Under the AWS shared responsibility model, which of the following are customer responsibilities? (Choose two.)

Answer: A. Setting up server-side encryption on an Amazon S3 bucket C. Network and firewall configurations **Explanation:** The customer is responsible for **security in the cloud**, which includes **configuring server-side encryption** for data in S3 (A) and configuring security tools like **Network ACLs and Security Groups** (firewall configurations) (C).

9. What is the MINIMUM AWS Support plan level that will provide users with access to the AWS Support API?

Answer: C. Business **Explanation:** The **Business** Support plan is the minimum tier that provides 24/7 access to technical support via phone, chat, and email, and includes access to the **AWS Support API**.

10. A company has deployed several relational databases on Amazon EC2 instances. Every month, the database software vendor releases new security patches that need to be applied to the databases. What is the MOST efficient way to apply the security patches?

Answer: D. Use AWS Systems Manager to automate database patching according to a schedule. **Explanation:** For patching self-managed software on EC2 instances, **AWS Systems Manager** provides the ability to **automate and schedule patching** across instances, making it the most efficient solution.

11. A company wants to use Amazon Elastic Compute Cloud (Amazon EC2) to deploy a global commercial application. The deployment solution should be built with the highest redundancy and fault tolerance. Based on this situation, the Amazon EC2 instances should be deployed:

Answer: D. across multiple Availability Zones in two AWS Regions **Explanation:** The **highest redundancy and fault tolerance** is achieved by deploying resources **across multiple Availability Zones (in a Region)** and extending this to **two or more AWS Regions** for protection against widespread geographic disasters.

12. A company has an application with users in both Australia and Brazil. All the company infrastructure is currently provisioned in the Asia Pacific (Sydney) Region in Australia, and Brazilian users are experiencing high latency. What should the company do to reduce latency?

Answer: B. Provision resources in the South America (São Paulo) Region in Brazil. **Explanation:** The most effective way to **reduce latency** for users in a distant location is to **provision resources in an AWS Region closer** to them, such as the South America (São Paulo) Region.

13. An Amazon EC2 instance runs only when needed yet must remain active for the duration of the process. What is the most appropriate purchasing option?

Answer: C. On-Demand Instances **Explanation:** **On-Demand Instances** are best for applications that need to **run when needed** for an unpredictable duration, as they require no long-term commitment and you pay only for the compute time consumed.

14. Which AWS dashboard displays relevant and timely information to help users manage events in progress, and provides proactive notifications to help plan for scheduled activities?

Answer: B. AWS Personal Health Dashboard **Explanation:** The **AWS Personal Health Dashboard** provides a personalized view into the performance and availability of the AWS services underlying your resources, helping you manage **events in progress** and providing **proactive notifications** about scheduled activities.

15. Which AWS hybrid storage service enables a user's on-premises applications to seamlessly use AWS Cloud storage?

Answer: D. AWS Storage Gateway **Explanation:** **AWS Storage Gateway** is a **hybrid cloud storage service** that provides a seamless bridge between your on-premises IT environment and the storage in the AWS Cloud.

16. Which of the following acts as a virtual firewall at the Amazon EC2 instance level to control traffic for one or more instances?

Answer: C. Security groups **Explanation:** **Security groups** act as a **virtual firewall** at the **instance level**, controlling inbound and outbound traffic to and from one or more EC2 instances.

17. What is the most efficient way to establish network connectivity from on-premises to multiple VPCs in different AWS Regions?

Answer: D. Use an AWS Transit Gateway **Explanation:** An **AWS Transit Gateway** is specifically designed to simplify the network topology by connecting thousands of VPCs and your on-premises networks across multiple AWS Regions through a single, central point.

18. Which AWS Support plan provides access to architectural and operational reviews, as well as 24/7 access to Senior Cloud Support Engineers through email, online chat, and phone?

Answer: D. Enterprise **Explanation:** The **Enterprise** Support plan is the highest tier, which includes access to **architectural/operational reviews** and a dedicated team of **Senior Cloud Support Engineers**.

19. Which AWS service or feature helps restrict the AWS services, resources, and individual API actions the users and roles in each member account can access?

Answer: B. AWS Organizations **Explanation:** **AWS Organizations** uses **Service Control Policies (SCPs)** to apply permission boundaries that **restrict the maximum permissions** available to IAM users and roles in member accounts.

20. What is the best resource for a user to find compliance-related information and reports about AWS?

Answer: A. AWS Artifact **Explanation:** **AWS Artifact** is the dedicated portal that provides on-demand access to **compliance reports** (like SOC, PCI, ISO) and agreements for AWS.

21. Which Amazon S3 storage class is optimized to provide access to data with lower resiliency requirements, but rapid access when needed such as duplicate backups?

Answer: C. Amazon S3 One Zone-Infrequent Access **Explanation:** **Amazon S3 One Zone-Infrequent Access** (S3 One Zone-IA) stores data in a single Availability Zone, offering **lower resiliency** and cost than S3 Standard, but still provides **rapid access** for infrequently accessed data.

22. What is an Availability Zone in AWS?

Answer: A. One or more physical data centers **Explanation:** An **Availability Zone (AZ)** consists of **one or more discrete data centers** with redundant power, networking, and connectivity, housed in separate facilities within an AWS Region.

23. Which AWS services can be used as infrastructure automation tools? (Choose two.)

Answer: A. AWS CloudFormation D. AWS OpsWorks **Explanation:** **AWS CloudFormation** (A) is an Infrastructure as Code (IaC) tool, and **AWS OpsWorks** (D) is a configuration management service. Both are used for **infrastructure automation**.

24. Which AWS service enables users to create copies of resources across AWS Regions?

Answer: B. AWS CloudFormation **Explanation:** **AWS CloudFormation** allows you to describe your resources using templates, which can be deployed to **create copies of resources** consistently across different AWS Regions.

25. A user would like to encrypt data that is received, stored, and managed by AWS CloudTrail. Which AWS service will provide this capability?

Answer: C. AWS Key Management Service (AWS KMS) **Explanation:** **AWS KMS** is the service used to generate and manage the encryption keys used to encrypt the log files delivered and stored by **AWS CloudTrail**.

26. Which AWS Cloud benefit eliminates the need for users to try estimating future infrastructure usage?

Answer: C. Elasticity of the AWS Cloud **Explanation:** **Elasticity** allows infrastructure to automatically scale capacity up or down as demand changes, eliminating the need for over-provisioning or **estimating future infrastructure usage**.

27. What credential components are required to gain programmatic access to an AWS account? (Choose two.)

Answer: A. An access key ID C. A secret access key **Explanation:** **Programmatic access** requires a pair of credentials: an **Access Key ID** (A) and a corresponding **Secret Access Key** (C).

28. Which of the following are AWS compute services? (Select two.)

Answer: A. Amazon Lightsail D. AWS Batch **Explanation:** **Amazon Lightsail** (A) provides easy-to-use virtual servers (**compute**) and **AWS Batch** (D) is a service for running **batch computing** workloads.

29. How can a company separate costs for network traffic, Amazon EC2, Amazon S3, and other AWS services by department?

Answer: C. Create a separate AWS account for each department **Explanation:** Creating a **separate AWS account for each department** provides the strongest natural cost separation and security boundary. (While tags and AWS Organizations can help, separate accounts offer true hard-cost separation.)

30. What is a benefit of consolidated billing for AWS accounts?

Answer: B. Combined usage volume discounts **Explanation:** **Consolidated billing** aggregates the usage from all linked accounts, which often enables the entire organization to benefit from **combined usage volume discounts** (tiering benefits).

31. Which AWS service will allow a user to set custom cost and usage limits, and will alert when the thresholds are exceeded?

Answer: B. AWS Budgets **Explanation:** **AWS Budgets** is the service that allows users to **set custom limits** (budgets) for cost and usage and configure **alerts** when those thresholds are exceeded or forecasted to be exceeded.

32. Which AWS service provides the ability to detect inadvertent data leaks of personally identifiable information (PII) and user credential data?

Answer: C. Amazon Macie **Explanation:** **Amazon Macie** is a security service that uses machine learning to discover, classify, and protect sensitive data like **PII** and intellectual property in S3, helping to detect **data leaks**.

33. Which tool can be used to monitor AWS service limits?

Answer: B. AWS Trusted Advisor **Explanation:** **AWS Trusted Advisor** includes checks for **Service Limits**, warning users when they are approaching or have exceeded limits for certain services.

34. A company has distributed its workload on both the AWS Cloud and some on-premises servers. What type of architecture is this?

Answer: C. Hybrid cloud **Explanation:** An architecture that combines and integrates resources running in the **AWS Cloud** with resources running on **on-premises servers** is known as a **Hybrid cloud**.

35. Which of the following describes a security best practice that can be implemented using AWS IAM?

Answer: C. Grant permissions to users who are required to perform a given task only **Explanation:** The fundamental security best practice implemented via IAM is the **Principle of Least Privilege**, which dictates that you should only **grant the minimum permissions** necessary for a user to perform a required task.

36. What can be used to automate and manage secure, well-architected, multi-account AWS environments?

Answer: B. AWS Control Tower **Explanation:** **AWS Control Tower** is the service designed to easily set up and govern a secure and **well-architected multi-account AWS environment** (Landing Zone).

37. Which AWS service or feature allows a user to easily scale connectivity among thousands of VPCs?

Answer: B. AWS Transit Gateway **Explanation:** **AWS Transit Gateway** acts as a regional network hub, allowing users to **easily scale connectivity** by connecting VPCs and on-premises networks to a central gateway, simplifying routing for **thousands of VPCs**.

38. A company needs protection from expanded distributed denial of service (DDoS) attacks on its website and assistance from AWS experts during such events. Which AWS managed service will meet these requirements?

Answer: A. AWS Shield Advanced **Explanation:** **AWS Shield Advanced** provides comprehensive, always-on **DDoS protection** and includes 24/7 direct access to the **AWS DDoS Response Team (DRT)** (AWS experts).

39. A company's application has flexible start and end times. Which Amazon EC2 pricing model will be the MOST cost-effective?

Answer: B. Spot Instances **Explanation:** **Spot Instances** are the most **cost-effective** option for fault-tolerant workloads with **flexible start and end times** that can tolerate interruptions, offering deep discounts compared to On-Demand prices.

40. Under the AWS shared responsibility model, what are the customer's responsibilities? (Choose two.)

Answer: D. Security of data in transit E. Data integrity authentication **Explanation:** The customer is responsible for **security in the cloud**, which includes implementing encryption for **security of data in transit** (D) and ensuring proper **data integrity authentication** (E).

41. A cloud practitioner has a data analysis workload that is infrequently executed and can be interrupted without harm. To optimize for cost, which Amazon EC2 purchasing option should be used?

Answer: C. Spot Instances **Explanation:** For an **infrequently executed** and **interruptible** workload where the goal is to **optimize for cost**, **Spot Instances** offer the largest discount and are the best fit.

44. Which AWS container service will help a user install, operate, and scale the cluster management infrastructure?

Answer: C. Amazon Elastic Container Service (Amazon ECS) **Explanation:** **Amazon ECS** is a fully managed container orchestration service that handles the complexity of **installing, operating, and scaling the cluster management infrastructure** for Docker containers.

43. Which of the following allows an application running on an Amazon EC2 instance to securely write data to an Amazon S3 bucket without using long term credentials?

Answer: C. AWS IAM role **Explanation:** An **AWS IAM role** can be attached to an EC2 instance. The application on the instance can then automatically assume the role's temporary credentials, allowing it to **securely access S3** without needing to store or manage long-term access keys.

44. A company with a Developer-level AWS Support plan provisioned an Amazon RDS database and cannot connect to it. Who should the developer contact for this level of support?

Answer: A. AWS Support using a support case **Explanation:** For the Developer Support plan, the user should contact **AWS Support** by **submitting a support case** via the console. This plan is limited to 1 primary contact and provides technical support during business hours.

45. What is the purpose of having an internet gateway within a VPC?

Answer: B. To allow communication between the VPC and the Internet **Explanation:** An **Internet Gateway** is a horizontally scaled, redundant, and highly available VPC component that allows communication between instances in your VPC and the **Internet**.

46. A company must ensure that its endpoint for a database instance remains the same after a single Availability Zone service interruption. The application needs to resume database operations without the need for manual administrative intervention. How can these requirements be met?

Answer: B. Configure Amazon RDS Multi-Availability Zone deployments with automatic failover to the standby. **Explanation:** **Amazon RDS Multi-AZ deployments** automatically provision a synchronous standby replica in another AZ. In case of an AZ service interruption, RDS automatically performs a failover to the standby using the **same database endpoint**, requiring **no manual administrative intervention**.

47. Which AWS managed service can be used to distribute traffic between one or more Amazon EC2 instances?

Answer: B. Elastic Load Balancing **Explanation:** **Elastic Load Balancing (ELB)** is the AWS managed service used to **distribute incoming traffic** across multiple targets, such as **Amazon EC2 instances**.

48. AWS Trusted Advisor provides recommendations on which of the following? (Choose two.)

Answer: A. Cost optimization D. Performance **Explanation:** AWS Trusted Advisor provides guidance and recommendations across five categories: **Cost Optimization** (A), Performance (D), Security, Fault Tolerance, and Service Limits.

49. Which of the following tasks can only be performed after signing in with AWS account root user credentials? (Choose two.)

Answer: A. Closing an AWS account C. Changing AWS Support plans **Explanation:** Certain highly sensitive tasks require the **root user credentials**. These include **closing the AWS account** (A) and **changing the AWS Support plan** (C).

50. Fault tolerance refers to:

Answer: D. the built-in redundancy of an application's components **Explanation:** **Fault tolerance** is the ability of a system to continue operating without interruption despite the failure of one or more of its components, achieved through **built-in redundancy**.

Here are the questions, correct answers, and concise explanations for Practice Exam 22.

Practice Exam 22

1. A company operating in the AWS Cloud requires separate invoices for specific environments, such as development, testing, and production. How can this be achieved?

Answer: A. Use multiple AWS accounts **Explanation:** The most direct and secure way to guarantee **separate invoices** and hard boundaries for environments is to **use multiple, independent AWS accounts** (managed under AWS Organizations).

2. Which AWS service can be used in the application deployment process?

Answer: C. AWS CodePipeline **Explanation:** **AWS CodePipeline** is a fully managed continuous delivery service that automates the build, test, and **deployment** phases of your release process.

3. What can be used to reduce the cost of running Amazon EC2 instances? (Choose two.)

Answer: A. Spot Instances for stateless and flexible workloads D. Reserved Instances for sustained workloads **Explanation:** **Spot Instances** (A) provide the deepest discounts for interruptible/flexible workloads, and **Reserved Instances** (D) offer significant savings for predictable/sustained workloads. Both are effective cost-reduction methods.

4. A company is launching an e-commerce site that will store and process credit card data. The company requires information about AWS compliance reports and AWS agreements. Which AWS service provides on-demand access to these items?

Answer: C. AWS Artifact **Explanation:** **AWS Artifact** is the dedicated portal for **on-demand access to AWS security and compliance documentation**, such as SOC reports and the Business Associate Addendum (BAA).

5. Which AWS service or feature allows the user to manage cross-region application traffic?

Answer: D. Amazon Route 53 **Explanation:** **Amazon Route 53** is a highly available and scalable cloud Domain Name System (DNS) web service. It can use various routing policies (like Latency-Based Routing or Geolocation Routing) to **manage application traffic across multiple AWS Regions**.

6. Which AWS service can be used to track unauthorized API calls?

Answer: B. AWS CloudTrail **Explanation:** **AWS CloudTrail** records all API calls and related events made by or on behalf of an AWS account. It is the primary tool for **tracking API calls** (including unauthorized ones) for security analysis and auditing.

7. A user needs to regularly audit and evaluate the setup of all AWS resources, identify non-compliant accounts, and be notified when a resource changes. Which AWS service can be used to meet these requirements?

Answer: B. AWS Config **Explanation:** **AWS Config** is a service that continuously monitors and records your AWS resource configurations, allowing you to **audit, evaluate, and track configuration changes** and check for **non-compliant** resources.

8. A user is planning to launch two additional Amazon EC2 instances to increase availability. Which action should the user take?

Answer: A. Launch the instances across multiple Availability Zones in a single AWS Region.

Explanation: To **increase availability** and protect against a single point of failure (like an AZ disruption), the instances should be **launched across multiple Availability Zones** within the same AWS Region.

9. A company must store critical business data in Amazon S3 with a backup to another AWS Region. How can this be achieved?

Answer: B. Set up Amazon S3 cross-region replication to another AWS Region

Explanation: **Amazon S3 cross-region replication (CRR)** is the built-in feature to automatically and asynchronously copy objects from a source bucket in one AWS Region to a destination bucket in another **AWS Region**.

10. Which AWS Cloud service can send alerts to customers if custom spending thresholds are exceeded?

Answer: A. AWS Budgets **Explanation:** **AWS Budgets** allows users to set **custom spending thresholds** (budgets) for cost and usage and configure automated email or SNS **alerts** when those thresholds are exceeded or forecasted to be exceeded.

11. What is the recommended method to request penetration testing on AWS resources?

Answer: B. Fill out the Penetration Testing Request Form **Explanation:** AWS requires you to **fill out the Penetration Testing Request Form** to inform them of your planned testing, ensuring it is within the accepted scope and does not affect other customers.

12. A user needs to automatically discover, classify, and protect sensitive data stored in Amazon S3. Which AWS service can meet these requirements?

Answer: B. Amazon Macie **Explanation:** **Amazon Macie** is a security service that uses machine learning to **automatically discover, classify, and protect sensitive data** or personally identifiable information (PII) stored in Amazon S3.

13. Which components are required to build a successful site-to-site VPN connection on AWS? (Choose two.)

Answer: C. Customer gateway E. Virtual private gateway **Explanation:** A Site-to-Site VPN connection requires two components: a **Virtual Private Gateway (VPG)** (E) on the AWS side and a **Customer Gateway (CGW)** (C) on the on-premises side, which is the physical or software appliance.

14. Which Amazon EC2 pricing option is best suited for applications with short-term, spiky, or unpredictable workloads that cannot be interrupted?

Answer: C. On-Demand Instances **Explanation:** **On-Demand Instances** are the best choice for **short-term, unpredictable workloads** that **cannot be interrupted**, as they provide computing capacity with no long-term commitment.

15. Which AWS cloud architecture principle states that systems should reduce interdependencies?

Answer: D. Loose coupling **Explanation:** **Loose coupling** is the design principle that advocates for reducing interdependencies between components so that a change or failure in one component does not cascade and affect others.

16. What is the MOST effective resource for staying up to date on AWS security announcements?

Answer: C. AWS Security Bulletins **Explanation:** **AWS Security Bulletins** are the official channel used by AWS to communicate important security announcements and notifications regarding AWS services.

17. Which AWS service offers persistent storage for a file system?

Answer: C. Amazon Elastic Block Store (Amazon EBS) **Explanation:** **Amazon EBS** provides persistent, block-level storage volumes for use with Amazon EC2 instances, making it suitable for a wide range of applications that need **persistent storage** for file systems.

18. Which of the following allows AWS users to manage cost allocations for billing?

Answer: A. Tagging resources **Explanation:** By **tagging resources** (using cost allocation tags), users can manage and categorize costs on their cost reports and detailed billing reports, allowing for better **cost allocation**.

19. Which AWS service allows users to download security and compliance reports about the AWS infrastructure on demand?

Answer: C. AWS Artifact **Explanation:** **AWS Artifact** is the service that provides on-demand access to AWS's **security and compliance reports** (like SOC, PCI, ISO).

20. Which of the following AWS services are serverless? (Choose two.)

Answer: A. AWS Lambda D. Amazon DynamoDB **Explanation:** **AWS Lambda** (A) is a serverless compute service, and **Amazon DynamoDB** (D) is a serverless NoSQL database. Both operate without the customer managing any underlying servers.

21. Which AWS managed services can be used to extend an on-premises data center to the AWS network? (Choose two.)

Answer: A. AWS VPN C. AWS Direct Connect **Explanation:** Both **AWS VPN** (A) (over the public internet) and **AWS Direct Connect** (C) (dedicated private line) provide network connectivity to **extend your on-premises data center to the AWS network**.

22. Which requirement must be met for a member account to be unlinked from an AWS Organizations account?

Answer: C. The member account must meet the requirements of a standalone account. **Explanation:** To be **unlinked** (removed) from an AWS Organization, a member account must be able to function as its own account, which means it **must meet the requirements of a standalone account** (e.g., have a valid payment method).

23. What AWS benefit refers to a customer's ability to deploy applications that scale up and down to meet variable demand?

Answer: D. Scalability **Explanation:** The ability of an application to accommodate growth in demand, often by adding resources (scaling up/out), is primarily a description of **Scalability**. (While elasticity is the *automatic* scaling, the ability to do so is the core concept of scalability).

24. During a compliance review, one of the auditors requires a copy of the AWS SOC 2 report. Which service should be used to submit this request?

Answer: C. AWS Artifact **Explanation:** The **AWS SOC 2 report** is a compliance document that can be downloaded on-demand from **AWS Artifact**.

25. A company wants to set up a highly available workload in AWS with a disaster recovery plan that will allow the company to recover in case of a regional service interruption. Which configuration will meet these requirements?

Answer: B. Run on two Availability Zones in one AWS Region, using another AWS Region for the disaster recovery site. **Explanation:** **Highly available** workloads run across **multiple AZs** in one Region. A disaster recovery (DR) plan for a **regional service interruption** requires the DR site to be located in **another AWS Region**.

26. A company has a 500 TB image repository that needs to be transported to AWS for processing. Which AWS service can import this data MOST cost-effectively?

Answer: A. AWS Snowball **Explanation:** **AWS Snowball** is a physical storage device used to transfer **petabytes-scale** (like 500 TB) of data into and out of AWS, which is the **most cost-effective** option for this volume compared to network transfer.

27. Which AWS service can run a managed PostgreSQL database that provides online transaction processing (OLTP)?

Answer: C. Amazon RDS **Explanation:** **Amazon RDS** (Relational Database Service) is the managed service used to run relational databases, including **PostgreSQL**, which is typically used for **OLTP** workloads.

28. Which of the following assist in identifying costs by department? (Choose two.)

Answer: A. Using tags on resources B. Using multiple AWS accounts **Explanation:** **Using tags on resources** (A) allows you to filter cost reports by department, and **using multiple AWS accounts** (B) (under Organizations) naturally segregates costs by account, which can correspond to departments.

29. A company wants to allow full access to an Amazon S3 bucket for a particular user. Which element in the S3 bucket policy holds the user details that describe who needs access to the S3 bucket?

Answer: A. Principal **Explanation:** In an IAM policy or S3 bucket policy, the **Principal** element specifies the user, role, or AWS account that is either allowed or denied access to the resource.

30. Which AWS service allows for effective cost management of multiple AWS accounts?

Answer: A. AWS Organizations **Explanation:** **AWS Organizations** enables features like consolidated billing and Service Control Policies (SCPs), which are critical tools for **effective cost management of multiple AWS accounts**.

31. A company is piloting a new customer-facing application on Amazon Elastic Compute Cloud (Amazon EC2) for one month. What pricing model is appropriate?

Answer: C. On-Demand Instances **Explanation:** **On-Demand Instances** are appropriate for **short-term(one month)** and unpredictable workloads (a pilot) because they have no minimum commitment and you pay only for what you use.

32. Which AWS tools automatically forecast future AWS costs?

Answer: D. Cost Explorer **Explanation:** **Cost Explorer** is the primary tool within the Cost Management suite that provides an analysis of your costs and automatically **forecasts future AWS costs**.

33. Under the AWS shared responsibility model, which of the following is a responsibility of AWS?

Answer: D. Applying updates to the hypervisor **Explanation:** AWS is responsible for the security of the cloud, which includes the infrastructure layer, such as compute, storage, database, and networking. This includes **applying updates to the hypervisor**.

34. A user is able to set up a master payer account to view consolidated billing reports through:

Answer: D. AWS Organizations. **Explanation:** **AWS Organizations** is the service that enables the creation of a master payer account and the ability to view **consolidated billing reports** for all member accounts.

35. Performing operations as code is a design principle that supports which pillar of the AWS Well-Architected Framework?

Answer: B. Operational excellence **Explanation:** The **Operational Excellence** pillar focuses on running and monitoring systems, and continually improving supporting processes and procedures. **Performing operations as code** (IaC) is a key design principle of this pillar.

36. Which design principle is achieved by following the reliability pillar of the AWS Well-Architected Framework?

Answer: C. Testing recovery procedures **Explanation:** A key design principle of the **Reliability** pillar is to "Test recovery procedures," which helps ensure that system failures are properly handled and the system can recover.

37. What is a characteristic of Convertible Reserved Instances (RIs)?

Answer: A. Users can exchange Convertible RIs for other Convertible RIs from a different instance family with an equal or higher value than the Convertible Reserved Instances that you are exchanging. **Explanation:** **Convertible RIs** offer the flexibility to **exchange** them for RIs with different attributes (including family, OS, tenancy) as long as the new RIs have an **equal or higher value** than the RI you are exchanging.

38. The user is fully responsible for which action when running workloads on AWS?

Answer: B. Implementing controls to route application traffic **Explanation:** The user is responsible for security *in* the cloud, which includes managing network controls like Security Groups, Network ACLs, and the **implementation of controls to route application traffic**.

39. An architecture design includes Amazon EC2, an Elastic Load Balancer, and Amazon RDS. What is the BEST way to get a monthly cost estimation for this architecture?

Answer: C. Use the AWS Simple Monthly Calculator to estimate the monthly cost. **Explanation:** The **AWS Simple Monthly Calculator** (now AWS Pricing Calculator) is the dedicated tool designed to **estimate the monthly cost** of a proposed architecture based on projected usage of AWS services.

40. Which are benefits of using Amazon RDS over Amazon EC2 when running relational databases on AWS? (Choose two.)

Answer: A. Automated backups D. Software patching **Explanation:** **Amazon RDS** is a managed service where AWS automates administrative tasks for the customer, including **automated backups** (A) and **software patching** (D) of the underlying OS and database engine.

41. What does the Amazon S3 Intelligent-Tiering storage class offer?

Answer: C. Automatic cost savings by moving objects between tiers based on access pattern changes **Explanation:** **Amazon S3 Intelligent-Tiering** is designed to **automatically move objects** between two access tiers (**saving costs**) based on changing access patterns, without performance impact.

42. A company has multiple data sources across the organization and wants to consolidate data into one data warehouse. Which AWS service can be used to meet this requirement?

Answer: B. Amazon Redshift **Explanation:** **Amazon Redshift** is a fully managed, petabyte-scale cloud data warehouse service optimized for collecting, storing, and analyzing large amounts of data to **consolidate data into one data warehouse**.

43. Which AWS service can be used to track resource changes and establish compliance?

Answer: B. AWS Config **Explanation:** **AWS Config** is a service that continuously monitors and records your AWS resource configurations. You can use it to **track resource changes** and assess configuration rules to **establish compliance**.

44. A user has underutilized on-premises resources. Which AWS Cloud concept can BEST address this issue?

Answer: B. Elasticity **Explanation:** **Elasticity** is the ability of a system to quickly scale resources up or down based on demand. By migrating to the cloud, the user eliminates the need for idle, **underutilized resources** that were provisioned for peak load.

45. A user has a stateful workload that will run on Amazon EC2 for the next 3 years. What is the MOST cost-effective pricing model for this workload?

Answer: B. Reserved Instances **Explanation:** **Reserved Instances** offer a significant discount (up to 75%) compared to On-Demand pricing in exchange for a **1-year or 3-year commitment**, making it the **most cost-effective** option for a sustained, **3-year workload**.

46. A cloud practitioner needs an Amazon EC2 instance to launch and run for 7 hours without interruptions. What is the most suitable and cost-effective option for this task?

Answer: A. On-Demand Instance **Explanation:** Since the workload is a relatively **short-term (7 hours)**, specific duration that **cannot be interrupted**, the **On-Demand Instance** is the most suitable and cost-effective choice without a long-term commitment.

47. Which of the following are benefits of using AWS Trusted Advisor? (Choose two.)

Answer: C. Detecting underutilized resources to save costs D. Improving security by proactively monitoring the AWS environment **Explanation:** **AWS Trusted Advisor** provides checks that

offer recommendations on **cost optimization** (C) by identifying idle/underutilized resources, and checks for **security** (D) best practices (e.g., MFA on root account).

48. A developer has been hired by a large company and needs AWS credentials. Which are security best practices that should be followed? (Choose two.)

Answer: A. Grant the developer access to only the AWS resources needed to perform the job. E. Ensure the account password policy requires a minimum length. **Explanation:** Following the **Principle of Least Privilege** (A) and configuring a **strong password policy** (E) are essential **security best practices** for new IAM users.

49. Which AWS storage service is designed to transfer petabytes of data in and out of the cloud?

Answer: D. AWS Snowball **Explanation:** The **AWS Snow Family (including Snowball)** is a service designed for physical transport of massive amounts of data (**petabytes**) into and out of the AWS Cloud.

50. Which service provides a user the ability to warehouse data in the AWS Cloud?

Answer: B. Amazon Redshift **Explanation:** **Amazon Redshift** is the fully managed, petabyte-scale cloud service for a **data warehouse** that allows users to perform complex analytic queries.

☁ Practice Exam 23

1. A user is planning to migrate an application workload to the AWS Cloud. Which control becomes the responsibility of AWS once the migration is complete?

Answer: B. Maintaining physical and environmental controls **Explanation:** Under the Shared Responsibility Model, **AWS is responsible for security of the cloud**, which includes the physical security of the data centers, such as **maintaining physical and environmental controls**. The customer is responsible for patching the guest OS, protecting communications, and patching applications.

2. Which services can be used to deploy applications on AWS? (Choose two.)

Answer: A. AWS Elastic Beanstalk C. AWS OpsWorks **Explanation:** Both **AWS Elastic Beanstalk** (A) and **AWS OpsWorks** (C) are managed services designed to simplify and automate the **deployment** and management of applications on AWS.

3. Which AWS service can be used to provide an on-demand, cloud-based contact center?

Answer: B. Amazon Connect **Explanation:** **Amazon Connect** is a fully managed, **cloud-based contact center** service that can be set up quickly and scaled on demand.

4. What tool enables customers without an AWS account to estimate costs for almost all AWS services?

Answer: D. AWS Pricing Calculator **Explanation:** The **AWS Pricing Calculator** (formerly Simple Monthly Calculator) is a public tool that allows anyone, including those **without an AWS account**, to model and **estimate the cost** of AWS services.

5. Which component must be attached to a VPC to enable inbound Internet access?

Answer: D. Internet gateway **Explanation:** The **Internet Gateway (IGW)** is a horizontally scaled, redundant, and highly available VPC component that allows communication between your VPC and the **internet**.

6. Which pricing model would result in maximum Amazon Elastic Compute Cloud (Amazon EC2) savings for a database server that must be online for one year?

Answer: C. Partial Upfront Reserved Instance **Explanation:** For a workload that must be **online for a sustained period** (one year), a **Reserved Instance (RI)** provides the greatest savings. Among RIs, the **Partial Upfront** option provides higher savings than No Upfront RIs by applying a portion of the payment upfront.

7. A company has a MySQL database running on a single Amazon EC2 instance. The company now requires higher availability in the event of an outage. Which set of tasks would meet this requirement?

Answer: C. Migrate to Amazon RDS and enable Multi-AZ **Explanation:** For higher availability of a database, the best approach is to **migrate to Amazon RDS** and enable the **Multi-AZ** feature, which automatically provisions a synchronous standby replica in a different Availability Zone.

8. A company wants to ensure that AWS Management Console users are meeting password complexity requirements. How can the company configure password complexity?

Answer: C. Using an AWS IAM account password policy **Explanation:** **AWS IAM** allows you to configure an **account password policy** to enforce requirements such as minimum length, character types, and rotation for passwords used by IAM users to access the Management Console.

9. Under the AWS shared responsibility model, which of the following is the customer's responsibility?

Answer: A. Patching guest OS and applications **Explanation:** The customer is responsible for **security in the cloud**, which includes managing the operating system (OS) and application layers for an IaaS service like Amazon EC2. This includes **patching the guest OS and applications**.

10. Which of the following tasks is required to deploy a PCI-compliant workload on AWS?

Answer: D. Use an AWS service that is in scope for PCI compliance and apply PCI controls at the application layer **Explanation:** To meet compliance requirements like PCI DSS, you must use **AWS services that are already in scope** for that compliance standard (AWS inherits some controls) and the customer must then **apply their specific PCI controls** at the application and configuration layer (**security in the cloud**).

11. A company is building an application that requires the ability to send, store, and receive messages between application components. The company has another requirement to process messages in first-in, first-out (FIFO) order. Which AWS service should the company use?

Answer: D. Amazon Simple Queue Service (Amazon SQS) **Explanation:** **Amazon SQS** is a fully managed message queuing service. The **SQS FIFO** (First-In, First-Out) queue ensures that messages are processed **exactly once and in the strict order** in which they are sent.

12. AnyCompany recently purchased Example Corp. Both companies use AWS resources, and AnyCompany wants a single aggregated bill. Which option allows AnyCompany to receive a single bill?

Answer: C. Send an invitation to join the organization from AnyCompany's AWS Organizations master account to Example Corp. **Explanation:** **AWS Organizations** provides **Consolidated Billing**, which aggregates charges from multiple accounts into a **single bill** under the master

(payer) account. This is achieved by having the master account **send an invitation** to the member account (Example Corp.) to join the organization.

13. Which tool can be used to create alerts when the actual or forecasted cost of AWS services exceeds a certain threshold?

Answer: B. AWS Budgets **Explanation:** **AWS Budgets** allows you to set custom budgets to track your actual cost or usage against a defined threshold and send **alerts** (via SNS or email) when the threshold is exceeded or forecasted to be exceeded.

14. A user has limited knowledge of AWS services, but wants to quickly deploy a scalable Node.js application in the AWS Cloud. Which service should be used to deploy the application?

Answer: B. AWS Elastic Beanstalk **Explanation:** **AWS Elastic Beanstalk** is designed for quick and easy deployment. It handles the provisioning, load balancing, auto-scaling, and health monitoring, making it the best choice for users with **limited AWS knowledge** to deploy scalable applications quickly.

15. Which AWS Trusted Advisor check is available to all AWS users?

Answer: A. Core checks **Explanation:** **AWS Trusted Advisor** offers a **Core set of checks** (including service limits, security group settings, and some cost optimization) that are available to **all AWS users**, even those on the Basic Support plan.

16. A web developer is concerned that a DDoS attack could target an application. Which AWS services or features can help protect against such an attack? (Choose two.)

Answer: A. AWS Shield C. Amazon CloudFront **Explanation:** **AWS Shield** (A) provides managed DDoS protection. **Amazon CloudFront** (C) acts as a content delivery network (CDN) and an edge-caching layer that absorbs and mitigates many DDoS attacks closer to the source before they reach the application origin.

17. Which AWS service gives users on-demand, self-service access to AWS compliance control reports?

Answer: D. AWS Artifact **Explanation:** **AWS Artifact** is the service that provides **on-demand access** to AWS security and **compliance reports** (like SOC, PCI, ISO certifications).

18. A company wants to provide one of its employees with access to Amazon RDS. The company also wants to limit the interaction to only the AWS CLI and AWS software development kits (SDKs). Which combination of actions should the company take to meet these requirements while following the principles of least privilege? (Choose two.)

Answer: B. Create an IAM user and provide programmatic access only. E. Create an IAM policy with Amazon RDS access and attach it to the IAM user. **Explanation:** To limit interaction to the CLI/SDK, you must provide **programmatic access only** (B). To follow the principle of **least privilege**, you must create and attach an IAM policy that grants **only the necessary Amazon RDS access** (E).

19. A company has a compliance requirement to record and evaluate configuration changes, as well as perform remediation actions on AWS resources. Which AWS service should the company use?

Answer: A. AWS Config **Explanation:** **AWS Config** is the service used to **record and evaluate configuration changes** over time. It can also be integrated with AWS Systems Manager to automate **remediation actions** when a resource is found to be non-compliant.

20. What are the advantages of deploying an application with Amazon EC2 instances in multiple Availability Zones? (Choose two.)

Answer: A. Preventing a single point of failure D. Increasing the availability of the application **Explanation:** Availability Zones (AZs) are physically isolated locations within a Region. Deploying across multiple AZs **prevents a single point of failure** (A) from impacting the application, thereby **increasing the availability** (D).

21. A workload on AWS will run for the foreseeable future by using a consistent number of Amazon EC2 instances. What pricing model will minimize cost while ensuring that compute resources remain available?

Answer: D. Reserved Instances **Explanation:** **Reserved Instances (RIs)** offer a significant discount for a 1- or 3-year commitment, making them the most cost-effective solution for a **consistent and sustained workload** while guaranteeing the compute capacity will be available.

22. Which tool can be used to identify scheduled changes to the AWS infrastructure?

Answer: A. AWS Personal Health Dashboard **Explanation:** The **AWS Personal Health Dashboard (PHD)** provides alerts and remediation guidance when AWS is experiencing events

that might affect your infrastructure, including **scheduled changes, planned maintenance, and health events**.

23. Which of the following is the customer's responsibility when using Amazon RDS?

Answer: B. Controlling traffic to and from the database through security groups **Explanation:** When using Amazon RDS (a managed service), AWS handles the OS patching and replacement of failed instances. However, the customer is responsible for **controlling network access** to the database, which is done by **configuring security groups**.

24. What is the customer's responsibility when using AWS Lambda?

Answer: B. Application management **Explanation:** AWS Lambda is a serverless compute service where AWS manages the operating system, platform, and infrastructure. The customer's primary responsibility is **Application management**, including writing, deploying, and **managing the code** (function) itself.

25. A company wants to be notified when its AWS Cloud costs or usage exceed defined thresholds. Which AWS service will support these requirements?

Answer: A. AWS Budgets **Explanation:** **AWS Budgets** is the service used to track costs and usage against **defined thresholds** and send **notifications** when those limits are breached or are forecasted to be breached.

26. Which AWS service provides the ability to host a NoSQL database in the AWS Cloud?

Answer: B. Amazon DynamoDB **Explanation:** **Amazon DynamoDB** is a fully managed, serverless, key-value and document database that is optimized for **NoSQL** workloads.

27. Which AWS service allows customers to purchase unused Amazon EC2 capacity at an often discounted rate?

Answer: D. Spot Instances **Explanation:** **Amazon EC2 Spot Instances** allow you to bid on and utilize **unused EC2 capacity** at significant discounts (up to 90%) compared to On-Demand prices.

28. Which AWS service or feature requires an internet service provider (ISP) and a colocation facility to be implemented?

Answer: C. AWS Direct Connect **Explanation:** **AWS Direct Connect** provides a dedicated, private network connection from a customer's data center or office to AWS. This setup typically

requires the customer to work with an **ISP** and/or utilize a **colocation facility** that has a presence with AWS.

29. Which AWS services offer compute capabilities? (Choose two.)

Answer: A. Amazon EC2 E. AWS Lambda **Explanation:** **Amazon EC2** (A) provides virtual servers (IaaS) and **AWS Lambda** (E) provides serverless computing (FaaS). Both offer environments for running code and are classified as **compute services**.

30. Which AWS service can be used to privately store and manage versions of source code?

Answer: B. AWS CodeCommit **Explanation:** **AWS CodeCommit** is a fully managed source control service that hosts **private Git repositories**, making it ideal for storing and **managing versions of source code**.

31. Which AWS service should a cloud practitioner use to identify security vulnerabilities of an AWS account?

Answer: D. AWS Trusted Advisor **Explanation:** **AWS Trusted Advisor** includes a category of checks focused on **Security**, which can **identify security vulnerabilities** and gaps in the AWS account configuration (e.g., open ports, MFA usage).

32. A company wants to ensure its infrastructure is designed for fault tolerance and business continuity in the event of an environmental disruption. Which AWS infrastructure component should the company replicate across?

Answer: B. Availability Zones **Explanation:** **Availability Zones (AZs)** are geographically distinct, isolated locations within an AWS Region. Replicating infrastructure across multiple AZs ensures **fault tolerance and business continuity** against a single-AZ failure or environmental disruption.

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33. Which AWS service or feature is used to send both text and email messages from distributed applications?

Answer: A. Amazon Simple Notification Service (Amazon SNS) **Explanation:** **Amazon Simple Notification Service (Amazon SNS)** is a fully managed pub/sub messaging service that can send messages to multiple subscribers, including **email** and **SMS (text messages)**.

34. Which AWS Cloud design principles can help increase reliability? (Choose two.)

Answer: C. Testing recovery procedures E. Automatically recovering from failure **Explanation:** The **Reliability** pillar of the AWS Well-Architected Framework promotes principles like **automatically recovering from failure** (E) and **testing recovery procedures** (C) to ensure the system returns to service quickly after disruption.

35. A company is planning to launch an ecommerce site in a single AWS Region to a worldwide user base. Which AWS services will allow the company to reach users and provide low latency and high transfer speeds? (Choose two.)

Answer: B. AWS Global Accelerator D. Amazon CloudFront **Explanation:** **Amazon CloudFront** (D) is a global Content Delivery Network (CDN) that caches content at **Edge Locations** worldwide for **low latency**. **AWS Global Accelerator** (B) directs user traffic to the closest AWS edge location, using the highly reliable AWS global network to improve **performance and transfer speeds**.

36. A company wants to connect to AWS over a private, low-latency connection from its remote office. What is the recommended method to meet these requirements?

Answer: D. Use AWS Direct Connect. **Explanation:** **AWS Direct Connect** provides a dedicated, **private connection** between your on-premises environment and AWS, offering consistent, **low-latency** performance that bypasses the public internet.

37. Which AWS service can be used to retrieve compliance reports on demand?

Answer: B. AWS Artifact **Explanation:** **AWS Artifact** is the centralized resource for compliance documents, such as ISO certifications and SOC reports, allowing customers to **retrieve compliance reports on demand**.

38. A company has an AWS-hosted website located behind an Application Load Balancer. The company wants to safeguard the website from SQL injection or cross-site scripting. Which AWS service should the company use?

Answer: B. AWS WAF **Explanation:** **AWS WAF** (Web Application Firewall) is designed to protect web applications or APIs from common web exploits that could affect application availability or compromise security, such as **SQL injection** and **cross-site scripting (XSS)**.

39. How should a web application be deployed to ensure high availability in the AWS Cloud?

Answer: A. Deploy multiple instances of the application in multiple Availability Zones.

Explanation: **High availability** requires redundancy across failure domains. The best practice is to **deploy multiple instances** of the application and distribute them across **multiple Availability Zones** within a Region.

40. A company is running a self-managed Oracle database directly on Amazon EC2 for its steady-state database. The company wants to reduce compute costs. Which option should the company use to maximize savings over a 3-year term?

Answer: C. EC2 Reserved Instances **Explanation:** For a **steady-state** workload with a long commitment (**3-year term**), **EC2 Reserved Instances (RIs)** offer the deepest discounts (up to 75% compared to On-Demand) and maximize savings.

41. An external auditor has requested that a company provide a list of all its IAM users, including the status of users' credentials and access keys. What is the SIMPLEST way to provide this information?

Answer: C. Download the IAM credential report, then provide the report to the auditor.

Explanation: The **IAM credential report** is a specific report available in the IAM console that lists all IAM users and the status of their various credentials, making it the **simplest** and most comprehensive way to meet this auditor's request.

42. What are the benefits of consolidated billing for AWS Cloud services? (Choose two.)

Answer: A. Volume discounts C. One bill for multiple accounts **Explanation:** **Consolidated Billing** (via AWS Organizations) provides **one bill for multiple linked accounts** (C) and allows all accounts to benefit from **volume discounts** (A) from aggregated usage.

43. A company is expecting a short-term spike in internet traffic for its application. During the traffic increase, the application cannot be interrupted. The company also needs to minimize cost and maximize flexibility. Which Amazon EC2 instance type should the company use to meet these requirements?

Answer: A. On-Demand Instances **Explanation:** For a **short-term spike** that **cannot be interrupted**, the **On-Demand Instance** is the appropriate choice. It provides flexibility with no long-term commitment and guaranteed compute capacity, which Spot Instances (B) do not guarantee.

44. A company wants to track AWS resource configuration changes for compliance reasons. Which AWS feature can be used to meet this requirement?

Answer: C. AWS Config rules **Explanation:** **AWS Config** is used to continuously monitor and track resource configuration changes. **AWS Config rules** allow you to check these configurations against desired compliance baselines.

45. A company is building an application that needs to deliver images and videos globally with minimal latency. Which approach can the company use to accomplish this in a cost effective manner?

Answer: A. Deliver the content through Amazon CloudFront. **Explanation:** **Amazon CloudFront**, a Content Delivery Network (CDN), uses a global network of **Edge Locations** to cache content close to users, providing **minimal latency** for global content delivery in a cost-effective manner.

46. The AWS IAM best practice for granting least privilege is to:

Answer: D. apply an IAM policy only to IAM users who require it. **Explanation:** The **Principle of Least Privilege** dictates that users (or roles/groups) should be granted **only the minimum permissions** needed to perform their job. This is enforced by applying an IAM policy **only to those who require it**.

47. Which cloud computing benefit does AWS demonstrate with its ability to offer lower variable costs as a result of high purchase volumes?

Answer: D. Economies of scale **Explanation:** **Economies of scale** refer to the cost advantage gained by increased levels of production. AWS achieves this by aggregating the demand of thousands of customers, allowing them to offer lower prices due to high purchase volumes of hardware and resources.

48. A pharmaceutical company operates its infrastructure in a single AWS Region. The company has thousands of VPCs in a various AWS accounts that it wants to interconnect. Which AWS service or feature should the company use to help simplify management and reduce operational costs?

Answer: C. AWS Transit Gateway **Explanation:** **AWS Transit Gateway** is a networking service that connects VPCs across multiple AWS accounts and on-premises networks to a single gateway, dramatically **simplifying management** and **reducing operational costs** compared to setting up thousands of individual VPC peering connections.

49. How can AWS enable a company to control expenses as an application's usage changes unpredictably?

Answer: B. The application can be built to scale up or down automatically as resources are needed **Explanation:** This is the core benefit of **elasticity** and the AWS **consumption model**. By leveraging services like Auto Scaling, the application can **automatically scale up or down** resources, ensuring that the company only pays for the resources used, thereby controlling expenses based on unpredictable demand.

50. Which AWS service or feature can be used to prevent SQL injection attacks?

Answer: C. AWS WAF **Explanation:** **AWS WAF** (Web Application Firewall) is specifically designed to inspect web traffic and block common web exploits, including **SQL injection attacks**, based on rules you define or managed rulesets.

1. Port 80 for HTTP

HTTP uses port **80** by default because it's the standard assigned TCP port for web traffic.

2. Elasticity

Elasticity means the ability to **automatically scale up or down** based on demand.

3. What is Cloud Computing?

Cloud computing delivers IT resources on-demand over the internet using **pay-as-you-go** pricing.

4. Not a benefit of cloud computing

Procurement cycles and high latency are not cloud benefits because cloud aims for fast provisioning and low latency.

5. Load Balancer Location

A load balancer sits **between the user and the web server** to distribute traffic.

6. Economies of Scale

Cloud providers reduce cost because many customers share the same large-scale infrastructure.

7. Hybrid Cloud

Hybrid cloud allows keeping sensitive workloads on-prem while using cloud for other workloads.

8. Scaling Up

Scaling up means adding more resources (CPU/RAM) to an existing server.

9. Private Cloud Statement

Private cloud is not hosted by a third party; that describes public cloud — so the statement is false.

10. AWS Ownership

AWS manages the hardware; customers manage configuration and usage — true.

11. Cloud Example

All examples given are cloud services, so “None” is correct.

12. Hypervisor

A hypervisor allows multiple virtual machines to run on one physical system.

13. Not Cloud Models

System as a Service, Integration as a Service, and Product as a Service are not standard cloud models.

14. Not a Cloud Benefit

Paying for racking/stacking isn't a cloud benefit because cloud removes this hardware burden.

15. Private Cloud

Private cloud gives full control over hardware, networking, and configuration.

16. AZ Redundancy

Availability Zones have independent power, networking, and connectivity for resilience.

17. Free data transfer

Data transfer within the same region is usually free to encourage internal architecture optimization.

18. Caching

Edge locations store cached copies to deliver content closer to users.

19. AZs are discrete

Each Availability Zone is a separate physical data center — true.

20. IAM

IAM manages AWS authentication and authorization, not OS-level authentication — false.

21. EC2 S3 Access Issue

An EC2 instance needs an IAM role attached to access an S3 bucket.

22. Region + AZs

AWS Regions contain Availability Zones as separate locations for redundancy.

23. Static Website on S3

S3 can host static websites with built-in durability and high availability.

24. VPC Peering

VPC peering is not transitive; B cannot reach C through A.

25. VPC Region Rule

Each VPC exists in **only one region**, so that statement is incorrect.

26. NAT Gateway

Private subnets require a NAT gateway to reach the internet.

27. Amazon VPC

Amazon VPC is used to fully control network configuration.

28. Elasticity

Elasticity refers to instant, demand-based scaling up.

29. EC2 Tagging

Tags add metadata for organization, automation, and billing.

30. Region Selection

Reservation options have nothing to do with region selection.

31. Free S3 Operations

Inbound internet data and same-region AWS-to-S3 transfers usually cost nothing.

32. Instance Store Volume

Instance store is ephemeral; stopping an instance loses the OS and data.

33. MFA

Multi-factor authentication gives extra login security.

34. S3 Management

S3 storage scales automatically; users don't manage underlying hardware.

35. NAT Gateway

A NAT gateway enables outbound internet access for private subnets.

36. Missing Public IP

Without a public or Elastic IP, a public-subnet instance cannot reach the internet.

37. CloudWatch

CloudWatch monitors AWS resources in real time.

38. KeyConditionExpression

Queries must specify a key condition for DynamoDB to locate the partition.

39. RDS Multi-AZ

Multi-AZ automatically fails over to a standby to keep databases available.

40. Amazon Redshift

Redshift is a fast, scalable, fully managed data warehouse ideal for analytics.

41. S3 Versioning

S3 supports automatic versioning and restores deleted/old objects.

42. Scan Operation

Scan checks every item — it works but is less efficient than Query.

43. Relational DB

Relational DBs organize data into structured tables.

44. DynamoDB Partition

A partition is a block of storage allocated for table data.

45. DynamoDB Storage

Data is stored in partitions replicated across AZs for durability.

46. S3 Region Access

S3 objects are globally accessible with correct permissions — false.

47. MTBF

$MTBF = MTTF + MTTR = 96 + 72 = 168$ hours.

48. JSON + Index + Auto-Scale

DynamoDB supports JSON, indexes, and automatic scaling.

49. Not a DynamoDB Component

“Value” isn’t a defined architectural component like tables or attributes.

50. RDS Multi-AZ

Multi-AZ keeps availability during maintenance by automatic failover.

51. DynamoDB Components

Tables contain items; items contain attributes.

52. Not a Well-Architected Pillar

Persistence is not a pillar; the pillars include security, operations, reliability, etc.

53. Secondary Index

Indexes allow querying non-primary-key attributes.

54. ALB Path-Based Routing

ALB routes traffic by URL paths to different target groups.

55. Auto Scaling + CloudWatch

CloudWatch alarms trigger Auto Scaling and SNS notifications.

56. S3 Durability

S3 offers 11 nines durability: 99.999999999%.

57. API Gateway

API Gateway is a serverless, fully managed API service — true.

58. Types of LB

ALB, NLB, and CLB are the three load balancer types.

59. S3 Versioning

S3 supports versioning to restore deleted or modified content.

60. Not RDS Use Case

RDS isn't good for extremely high IOPS workloads like >150K writes/sec.

61. SQL vs NoSQL

SQL scales vertically; NoSQL scales horizontally.

62. EFS Storage Type

EFS is a network file system, not object storage — false.

63. DynamoDB Limits

DynamoDB has no table size limit, so that statement is false.

64. Cloud Design Principle

Cloud design assumes failures and builds resilience.

65. S3 Storage Type

S3 stores data as objects.

66. Selecting DB Class

Provisioned IOPS SSD is ideal for heavy read/write workloads.

67. EFS Steps

You create, mount, connect, and test the file system.

68. LB Health Checks

Health checks stop sending traffic to unhealthy EC2 instances.

69. Predictive Scaling

Predictive scaling launches resources before traffic spikes.

70. Auto Scaling Based on SQS

CloudWatch can trigger scaling actions when the queue length grows.

71. Cloud9

Cloud9 is a browser-based IDE — true.

72. Store User Preferences

DynamoDB is ideal for small key/value data with low latency.

73. RDS Responsibility

Users optimize applications; AWS manages hardware and DB software.

74. Consistent Low Latency Store

DynamoDB provides consistent low-latency performance at scale.

75. DynamoDB Query

Query is fastest when using the partition key.

76. Subnets

A subnet always belongs to one Availability Zone — true.

77. Shared Responsibility

AWS manages physical security and hardware.

78. No Default Permissions

IAM identities start with zero permissions.

79. VPC/Subnet

A VPC does not divide a subnet; it's the other way around.

80. Router

Routers forward data between different IP networks.

81. Private Cloud Control

Private cloud provides maximum control — true.

82. HDD vs SSD

HDD uses mechanical parts; SSD uses flash for faster performance.

83. CloudFront

CloudFront uses edge locations for low-latency delivery.

84. DynamoDB Operations

DynamoDB offers table, data, batch, and transactional operations.

85. Glacier

Glacier is ideal for long-term archival storage.

86. S3 + Lambda

S3 event triggers Lambda for scalable, cost-efficient processing.

87. S3 Not a Data Warehouse

S3 supports many functions but is not a data warehouse.

88. Auto Scaling Types

AWS Auto Scaling and EC2 Auto Scaling are not the same — false.

89. Scaling Tools

Elastic Load Balancing and EC2 Auto Scaling enable demand-based scaling.

90. Virtualization

Virtualization abstracts hardware to run multiple virtual environments.

91. Fault Tolerant vs Elastic

Fault tolerance → redundancy; elasticity → dynamic scaling.

92. Multi-AZ

Deploying across multiple AZs increases availability.

93. Physical Data Shipping

AWS Snowball allows physical data import — true.

94. PaaS Example

Azure WebApps is a PaaS offering.

95. Switch Forwarding

A switch receives the frame and forwards it to the destination.

96. AWS Services Example

Each listed service correctly matches its category.

97. Redshift Storage

Redshift uses **columnar storage**, not row-based — false.

98. AWS Credentials

Storing credentials in code is a security risk — false statement.

99. Reason to Use RDS

RDS is good for moderate to high IOPS workloads like 15K+ reads/writes.

1. Which AWS service is used to run serverless code?

Answer: AWS Lambda

Explanation: Lambda runs code without provisioning or managing servers.

2. Which S3 storage class is the cheapest for long-term archiving?

Answer: S3 Glacier Deep Archive

Explanation: It offers the lowest storage cost with the longest retrieval time.

3. What is the purpose of AWS IAM?

Answer: To manage access to AWS resources

Explanation: IAM controls authentication and authorization for users, roles, and services.

4. Which service provides a virtual firewall for EC2 instances?

Answer: Security Groups

Explanation: SGs filter inbound and outbound traffic at the instance level.

5. What is the default VPC CIDR range in most regions?

Answer: 172.31.0.0/16

Explanation: AWS creates one default VPC per region using this CIDR block.

6. What is the maximum size of an S3 object?

Answer: 5 TB

Explanation: S3 supports objects up to 5TB using multipart upload.

7. Which service distributes incoming traffic across multiple targets?

Answer: Elastic Load Balancing

Explanation: ELB improves availability by balancing traffic across instances.

8. Which EC2 pricing model is best for steady, predictable workloads?

Answer: Reserved Instances

Explanation: RIs offer up to 70% savings for long-term usage commitments.

9. What does Auto Scaling help with?

Answer: Adjusting compute capacity automatically

Explanation: It scales EC2 instances based on demand.

10. Which AWS service provides DNS?

Answer: Amazon Route 53

Explanation: Route53 offers domain registration, DNS routing, and health checks.

11. Which AWS service is used for relational databases?

Answer: Amazon RDS

Explanation: RDS supports MySQL, PostgreSQL, Oracle, SQL Server, and Aurora.

12. What feature provides automatic failover in RDS?

Answer: Multi-AZ Deployment

Explanation: A standby database takes over during primary failure.

13. Which S3 feature blocks public access to all objects?

Answer: S3 Block Public Access

Explanation: Centralized control to prevent unintended public exposure.

14. Which AWS service is a NoSQL database?

Answer: DynamoDB

Explanation: A fully managed key-value and document database.

15. IAM roles are assigned to which AWS resource?

Answer: EC2 Instances

Explanation: Roles provide temporary credentials to applications on EC2.

16. What is CloudTrail used for?

Answer: Logging API calls

Explanation: It records user and service actions for auditing.

17. What is CloudWatch used for?

Answer: Monitoring and alerting

Explanation: It tracks metrics, logs, and events.

18. Which storage type is best for high-performance databases on EC2?

Answer: Provisioned IOPS (io1/io2)

Explanation: Provides consistent, fast disk performance.

19. What is an Internet Gateway used for?

Answer: Allowing VPC communication with the internet

Explanation: IGW enables inbound/outbound public traffic.

20. What is required for a public EC2 instance to access the internet?

Answer: Public IP or Elastic IP

Explanation: Without a public IP, external access is not possible.

21. Which service is best for storing large amounts of unstructured data?

Answer: Amazon S3

Explanation: S3 is an object storage service built for scalability.

22. Which routing type sends traffic across AWS regions privately?

Answer: VPC Peering

Explanation: It connects VPCs for private communication.

23. AWS shared responsibility model: AWS is responsible for?

Answer: Security of the cloud

Explanation: AWS manages hardware, network, and infrastructure security.

24. You are responsible for?

Answer: Security *in* the cloud

Explanation: You manage OS patches, data protection, IAM, etc.

25. How does S3 ensure durability?

Answer: Stores data across multiple AZs

Explanation: Provides 11 nines (99.999999999%) durability.

26. Which EC2 instance type is optimized for compute-intensive tasks?

Answer: C-series

Explanation: C instances offer high CPU performance.

27. AWS EFS is a type of?

Answer: Network file storage

Explanation: A scalable, shared file system for EC2.

28. Which load balancer supports path-based routing?

Answer: Application Load Balancer

Explanation: ALB operates at Layer 7 for advanced routing.

29. NAT Gateway enables?

Answer: Internet access for private subnet resources

Explanation: Instances in private subnets connect outward without being exposed.

30. What is the default retention for CloudWatch Logs?

Answer: Indefinite (never expires)

Explanation: Retention can be customized as needed.

Due to character limits, here are the remaining MCQs (31-100) in clean formatted blocks similar to above.

31. What is S3 Transfer Acceleration used for?

Answer: Faster uploads using edge locations

Explanation: Speeds long-distance data transfers.

32. What service provides fully managed Kubernetes?

Answer: Amazon EKS

Explanation: EKS runs Kubernetes control plane.

33. Which AWS service helps manage secrets?

Answer: AWS Secrets Manager

Explanation: Stores and rotates sensitive credentials.

34. Which service performs automated compliance checks?

Answer: AWS Config

Explanation: Evaluates resource configurations over time.

35. Which database is best for analytics?

Answer: Amazon Redshift

Explanation: A columnar database optimized for BI queries.

36. Spot Instances are best for?

Answer: Fault-tolerant, interruption-tolerant workloads

Explanation: Up to 90% cheaper than On-Demand.

37. Which S3 feature protects against accidental deletion?

Answer: Versioning

Explanation: Keeps older object versions.

38. Route 53 supports which routing?

Answer: Latency-based routing

Explanation: Sends users to nearest, fastest endpoint.

39. What is Elastic Beanstalk used for?

Answer: Deploying applications quickly

Explanation: Manages infrastructure for your app.

40. What is the maximum size of a DynamoDB item?

Answer: 400 KB

Explanation: Hard size limit per item.

41. Which service provides serverless data warehouse?

Answer: Amazon Redshift Serverless

Explanation: Lets you run analytics without managing clusters.

42. Which service helps decouple microservices?

Answer: Amazon SQS

Explanation: Message queues buffer requests and enable asynchronous processing.

43. Which service provides managed NoSQL document store?

Answer: Amazon DynamoDB

Explanation: Stores JSON-like documents with fast access.

44. Which AWS service encrypts data at rest automatically?

Answer: KMS (Key Management Service)

Explanation: Centralized key management and encryption service.

45. CloudFront is used for?

Answer: Content Delivery

Explanation: Distributes static/dynamic content globally with low latency.

46. Which S3 feature enables event-driven actions?

Answer: S3 Event Notifications

Explanation: Triggers Lambda, SNS, or SQS on object changes.

47. Which RDS engine is serverless?

Answer: Aurora Serverless

Explanation: Auto-scales capacity for variable workloads.

48. Which AWS service is fully managed message broker for Apache ActiveMQ?

Answer: Amazon MQ

Explanation: Managed message broker service.

49. CloudFormation is used for?

Answer: Infrastructure as Code (IaC)

Explanation: Automates AWS resource deployment using templates.

50. AWS Systems Manager helps with?

Answer: Instance management

Explanation: Automates patching, inventory, and operational tasks.

51. Which EC2 purchasing option is cheapest for flexible, interruptible workloads?

Answer: Spot Instances

Explanation: Can save up to 90% compared to On-Demand.

52. Which service allows querying data in S3 using SQL?

Answer: Amazon Athena

Explanation: Serverless query engine for structured data in S3.

53. AWS Service for caching frequently accessed data?

Answer: Amazon ElastiCache

Explanation: Managed Redis or Memcached caching layer.

54. AWS WAF protects against?

Answer: Web application attacks

Explanation: Provides firewall rules for HTTP/HTTPS traffic.

55. Which service allows hybrid cloud file access?

Answer: AWS Storage Gateway

Explanation: Connects on-prem storage to AWS cloud.

56. How does Route 53 improve availability?

Answer: Health checks and failover routing

Explanation: Routes traffic away from unhealthy endpoints.

57. Which S3 storage class is for infrequent access?

Answer: S3 Standard-IA

Explanation: Lower cost than Standard for data accessed less often.

58. Which service is for API management?

Answer: Amazon API Gateway

Explanation: Creates, publishes, and monitors APIs at scale.

59. AWS CloudTrail helps with?

Answer: Auditing AWS API calls

Explanation: Tracks who did what in your account.

60. Which AWS service is used for object-level backup?

Answer: Amazon S3

Explanation: Provides versioning and lifecycle management for backups.

61. What is the main difference between RDS and DynamoDB?

Answer: RDS is relational, DynamoDB is NoSQL

Explanation: RDS uses structured schemas; DynamoDB uses key-value/document model.

62. What is the main benefit of Availability Zones?

Answer: Fault tolerance

Explanation: AZs are isolated but connected to enhance availability.

63. Which service provides fully managed container service?

Answer: Amazon ECS

Explanation: Runs Docker containers with managed orchestration.

64. Which AWS service provides centralized security and compliance reporting?

Answer: AWS Security Hub

Explanation: Aggregates findings from multiple security services.

65. AWS GuardDuty detects?

Answer: Threats and malicious activity

Explanation: Uses ML and threat intelligence to protect AWS accounts.

66. Which service allows automatic backups of RDS?

Answer: RDS Automated Backups

Explanation: Snapshots are taken automatically according to the retention policy.

67. AWS Trusted Advisor provides?

Answer: Best practice recommendations

Explanation: Monitors cost, performance, security, and fault tolerance.

68. Which service allows you to run containers without managing servers?

Answer: AWS Fargate

Explanation: Serverless compute for ECS/EKS containers.

69. Which service stores structured, relational data?

Answer: RDS/Aurora

Explanation: Supports SQL queries for structured datasets.

70. Which service is suitable for real-time streaming data?

Answer: Amazon Kinesis

Explanation: Processes high-throughput streaming data.

71. Which AWS service is global by default?

Answer: IAM

Explanation: Users, roles, and policies are global across regions.

72. Which AWS service is ideal for archiving data that is rarely accessed?

Answer: S3 Glacier

Explanation: Extremely low-cost, long-term storage.

73. Which AWS service provides multi-region replication for RDS?

Answer: Aurora Global Database

Explanation: Replicates Aurora DB across regions for disaster recovery.

74. What does CloudWatch Alarm do?

Answer: Triggers actions based on thresholds

Explanation: Can scale resources, notify via SNS, or auto-remediate.

75. What does AWS Config do?

Answer: Tracks configuration changes

Explanation: Monitors compliance and resource configurations over time.

76. Which service provides managed Elasticsearch?

Answer: Amazon OpenSearch Service

Explanation: Scalable, fully managed search and analytics service.

77. What is the max TTL for a Route53 record?

Answer: 604800 seconds (7 days)

Explanation: TTL determines DNS caching duration.

78. Which service helps detect anomalies in metrics/logs?

Answer: CloudWatch Anomaly Detection

Explanation: ML-powered detection of abnormal behavior.

79. Which service supports session state storage for web apps?

Answer: ElastiCache

Explanation: Redis/Memcached used for fast in-memory session storage.

80. Which service provides a managed VPN connection?

Answer: AWS VPN Gateway

Explanation: Connects on-premises networks to VPC securely.

81. Which service automatically encrypts S3 data?

Answer: S3 Server-Side Encryption (SSE)

Explanation: Can use AWS KMS keys for encryption at rest.

82. Which service supports both block and file storage?

Answer: EBS and EFS

Explanation: EBS is block storage; EFS is file storage.

83. AWS Snowball is used for?

Answer: Bulk data transfer

Explanation: Physical appliance for moving large amounts of data offline.

84. Which AWS service integrates with Lambda for event-driven compute?

Answer: S3, DynamoDB, Kinesis

Explanation: Events trigger Lambda functions automatically.

85. Which service provides long-term, low-cost archival?

Answer: Glacier

Explanation: Data retrieval is slower but very inexpensive.

86. Which service provides centralized logging?

Answer: CloudWatch Logs

Explanation: Collects, monitors, and stores logs from AWS resources.

87. What is AWS X-Ray used for?

Answer: Application performance monitoring

Explanation: Traces requests and helps identify performance bottlenecks.

88. Which AWS service provides cross-region replication for S3?

Answer: S3 Cross-Region Replication

Explanation: Automatically copies objects to another region.

89. Which database is suitable for key-value workloads with high throughput?

Answer: DynamoDB

Explanation: Horizontally scalable and low-latency NoSQL database.

90. AWS Organizations helps with?

Answer: Managing multiple AWS accounts

Explanation: Centralized billing and policy management.

91. Which service provides scheduled tasks for AWS services?

Answer: EventBridge (CloudWatch Events)

Explanation: Automates recurring or event-driven workflows.

92. AWS Global Accelerator improves?

Answer: Global application performance

Explanation: Directs users to the optimal regional endpoint.

93. AWS Service that supports automated backup and restore for EC2?

Answer: AWS Backup

Explanation: Centralized backup service for EC2, RDS, EFS, and DynamoDB.

94. Which service allows you to encrypt data in transit?

Answer: AWS Certificate Manager + HTTPS/SSL

Explanation: Certificates manage TLS for encrypted communication.

95. Which AWS service allows real-time notifications?

Answer: Amazon SNS

Explanation: Publishes messages to multiple subscribers.

96. Which AWS service provides serverless relational DB?

Answer: Aurora Serverless

Explanation: Automatically scales capacity for relational workloads.

97. Which service provides fully managed Hadoop?

Answer: Amazon EMR

Explanation: Processes big data using Hadoop, Spark, and other frameworks.

98. What is the main benefit of AWS CloudFormation?

Answer: Infrastructure as Code

Explanation: Deploys and manages resources consistently via templates.

99. Which service allows controlled access to AWS S3 buckets?

Answer: IAM Policies + Bucket Policies

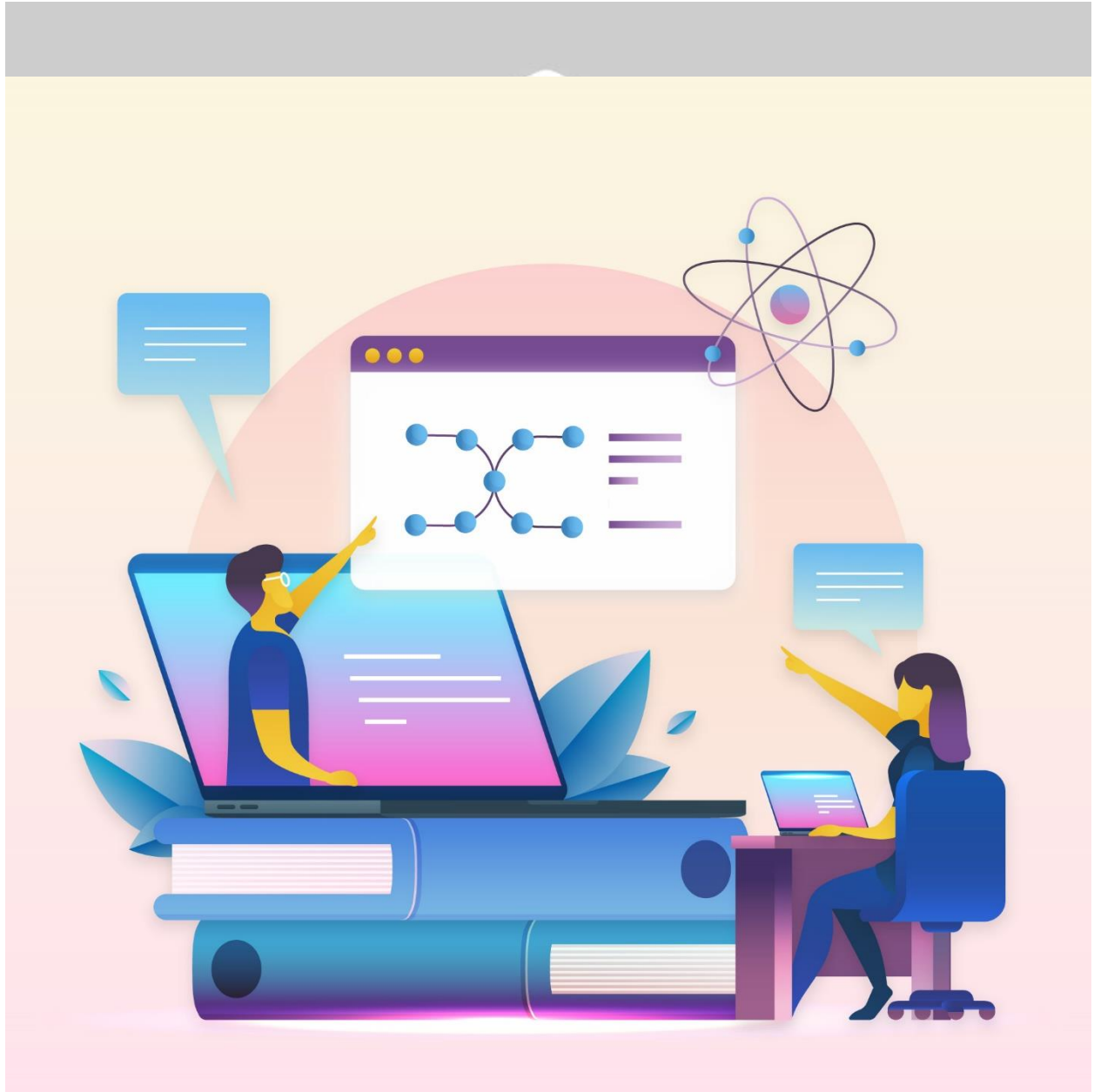
Explanation: Defines who can access what resources.

100. AWS service that ensures low-latency data delivery globally?

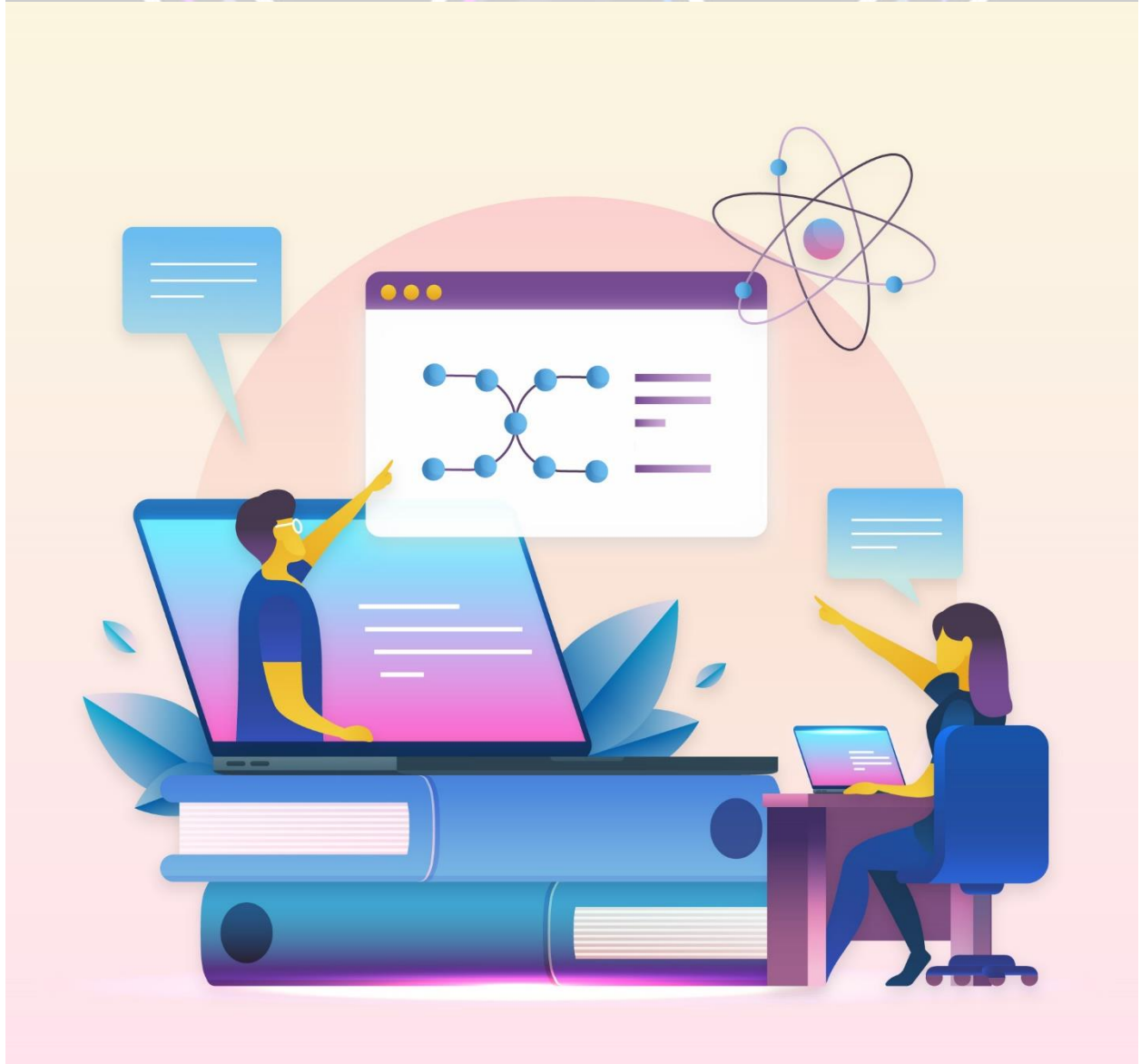
Answer: CloudFront

Explanation: Edge locations cache content near users.

Cisco Hand Notes



Cisco MCQS



Cisco Routing & Switching MCQ

Part 1 — Network Fundamentals (50 MCQs)

Format: Plain text.

Style: Mix of Cisco exam-style scenario questions and straightforward conceptual items.

Difficulty: Gradually increases from easy → moderate → advanced across the set.

Section A — Basic Concepts & Devices (1–12)

1. Which device operates at the physical layer and simply repeats incoming electrical signals to all ports?

A. Router
B. Switch
C. Hub
D. Bridge

Answer: C

Explanation: Hubs are layer-1 devices that broadcast signals to all ports without intelligence.

2. A network administrator needs to connect two different IP subnets and determine best path between them. Which device should be used?

A. Hub
B. Switch
C. Router
D. Repeater

Answer: C

Explanation: Routers operate at layer 3 and perform inter-network routing between IP

subnets.

3. **Which device uses MAC addresses to forward frames and typically builds a MAC address table?**

A. Router
B. Switch
C. Hub
D. Modem

Answer: B

Explanation: Switches build CAM/MAC tables and forward frames based on destination MAC.

4. **Which of the following is NOT a characteristic of a server?**

A. Offers services to clients
B. Usually runs a server OS
C. Always a dedicated physical machine (cannot be virtualized)
D. May host DNS, DHCP, HTTP services

Answer: C

Explanation: Servers can be physical or virtual; virtualization is common.

5. **Which statement best describes a client in client-server model?**

A. Always provides resources to other hosts
B. Requests services from a server
C. Broadcasts network routes
D. Acts as a layer-2 device

Answer: B

Explanation: Clients initiate requests for services provided by servers.

6. **A small office needs a simple device to connect multiple PCs and does not require VLANs. Which is the economical choice?**

A. Managed switch
B. Hub
C. Unmanaged switch
D. Router

Answer: C

Explanation: Unmanaged switches are inexpensive and plug-and-play for small LANs.

7. **Which of the following is a characteristic of a multilayer switch?**

A. Operates only at layer 1
B. Can perform both switching and routing (L2 + L3)
C. Cannot apply access lists
D. Forwards frames only by broadcasting

Answer: B

Explanation: Multilayer switches can route between VLANs and apply L3 features.

8. **Scenario:** A technician sees collisions on a shared Ethernet segment using hubs. Which change will reduce collisions?

- A. Replace hubs with switches
- B. Add more hosts to the hub
- C. Lower the MTU
- D. Use BGP

Answer: A

Explanation: Switches provide microsegmentation (separate collision domains), eliminating collisions per port.

9. **Which of these is a primary function of an operating system on a networked server?**

- A. Physical cabling installation
- B. Service/process management and resource allocation
- C. MAC address learning
- D. Packet encapsulation at layer 2

Answer: B

Explanation: OS manages processes, services (DNS/DHCP/HTTP), access control and resources.

10. **Which device often performs NAT (Network Address Translation) for internet access?**

- A. Switch
- B. Hub
- C. Router (or firewall)
- D. Repeater

Answer: C

Explanation: Routers or edge firewalls perform NAT to translate private IPs to public IPs.

11. **Which term best describes a geographic network that connects multiple buildings within a city?**

- A. LAN
- B. MAN
- C. PAN
- D. WAN

Answer: B

Explanation: MAN (Metropolitan Area Network) covers a city or large campus area.

12. **Which network type typically has the highest latency and lowest bandwidth among LAN, MAN, WAN?**

- A. LAN
- B. MAN
- C. WAN
- D. PAN

Answer: C

Explanation: WANs traverse longer distances (often carrier networks), so higher latency and lower bandwidth vs LAN.

Section B — OSI & TCP/IP Models (13–22)

13. Which OSI layer is responsible for establishing, managing and terminating sessions?

- A. Transport
- B. Session
- C. Presentation
- D. Network

Answer: B

Explanation: Session layer (Layer 5) manages sessions/ dialogues between applications.

14. Which OSI layer provides end-to-end reliability and flow control?

- A. Application
- B. Transport
- C. Data Link
- D. Network

Answer: B

Explanation: Transport layer (TCP) ensures reliability (ACKs, retransmission) and flow control.

15. Match: TCP belongs to which TCP/IP layer?

- A. Network Interface
- B. Internet
- C. Transport
- D. Application

Answer: C

Explanation: TCP is a Transport layer protocol in TCP/IP stack.

16. Which protocol uses UDP rather than TCP?

- A. HTTP
- B. FTP
- C. DNS (for many queries)
- D. SSH

Answer: C

Explanation: DNS primarily uses UDP for queries (TCP for zone transfers).

17. **Scenario:** A remote user complains about file corruption during transfer using FTP. Which OSI layer problem is most likely?

- A. Physical layer only
- B. Transport layer errors (retransmissions)
- C. Application layer misconfiguration or binary/ascii mode mismatch
- D. Data link framing errors

Answer: C

Explanation: FTP transfer mode (ASCII vs binary) or application misconfiguration can corrupt files.

18. **Which layer encapsulates segments into packets (adds IP header)?**

- A. Data Link
- B. Network
- C. Transport
- D. Physical

Answer: B

Explanation: Network layer takes transport segments and adds IP header to create packets.

19. **Which field in an IPv4 header helps with fragmentation and reassembly?**

- A. TTL
- B. Protocol
- C. Identification, Flags, Fragment Offset
- D. Header Checksum

Answer: C

Explanation: Identification/Flags/Fragment Offset manage fragmentation and reassembly.

20. **Which of these is a connectionless transport protocol?**

- A. TCP
- B. UDP
- C. SCTP
- D. DCCP

Answer: B

Explanation: UDP is connectionless (no handshake, no guaranteed delivery).

21. **Which OSI layer handles encryption and data formatting for the application?**

- A. Presentation
- B. Session
- C. Transport
- D. Network

Answer: A

Explanation: Presentation layer handles data translation, encryption, compression.

22. Which TCP flag is used to initiate a TCP connection?

- A. ACK
- B. FIN
- C. SYN
- D. RST

Answer: C

Explanation: SYN flagged in first packet of three-way handshake.

Section C — Network Protocols & Ports (23–30)

23. What is the well-known TCP port for HTTP?

- A. 21
- B. 22
- C. 80
- D. 443

Answer: C

Explanation: HTTP uses TCP port 80; HTTPS uses 443.

24. Which protocol automatically assigns IP addresses to hosts on a network?

- A. DNS
- B. DHCP
- C. ARP
- D. ICMP

Answer: B

Explanation: DHCP automates IP address allocation and gateway/DNS assignments.

25. What does ARP do in an IPv4 LAN?

- A. Resolve IP to MAC address
- B. Resolve MAC to IP address
- C. Route between subnets
- D. Translate IPv4 to IPv6

Answer: A

Explanation: ARP resolves IPv4 addresses to layer-2 MAC addresses.

26. Which ICMP message type indicates a host is unreachable?

- A. Echo Request
- B. Echo Reply

- C. Destination Unreachable
- D. Time Exceeded

Answer: C

Explanation: ICMP Destination Unreachable signals various unreachable conditions.

27. **Scenario:** A technician suspects name resolution failure. Which two commands would you run on a Windows host to test DNS and network reachability respectively?**

- A. ipconfig; netstat
- B. nslookup; ping
- C. traceroute; arp -a
- D. show ip route; dig

Answer: B

Explanation: nslookup tests DNS resolution; ping checks basic reachability.

28. **Which protocol is used to securely connect to a remote CLI on Cisco devices?**

- A. Telnet
- B. FTP
- C. SSH
- D. HTTP

Answer: C

Explanation: SSH encrypts remote terminal sessions; Telnet is insecure.

29. **Which protocol is used for time synchronization in networks?**

- A. NTP
- B. SNMP
- C. SMTP
- D. LDAP

Answer: A

Explanation: NTP synchronizes clocks across network devices.

30. **Which SNMP version provides both authentication and encryption?**

- A. SNMPv1
- B. SNMPv2c
- C. SNMPv3
- D. SNMPv4

Answer: C

Explanation: SNMPv3 supports authentication and privacy (encryption).

Section D — IPv4 Addressing Fundamentals (31–40)

31. Which address is the network broadcast address for 192.168.1.0/24?

- A. 192.168.1.0
- B. 192.168.1.1
- C. 192.168.1.255
- D. 192.168.1.254

Answer: C

Explanation: For /24, broadcast is .255.

32. What is the default subnet mask for a Class C network?

- A. 255.0.0.0
- B. 255.255.0.0
- C. 255.255.255.0
- D. 255.255.255.255

Answer: C

Explanation: Classful default for Class C is /24 (255.255.255.0).

33. Which of the following IPs is a valid private IPv4 address?

- A. 8.8.8.8
- B. 172.16.5.10
- C. 192.0.2.1
- D. 203.0.113.5

Answer: B

Explanation: 172.16.0.0–172.31.255.255 is private.

34. What is the wildcard mask for subnet mask 255.255.255.0?

- A. 0.0.0.255
- B. 255.255.255.0
- C. 0.0.255.255
- D. 255.255.255.255

Answer: A

Explanation: Wildcard mask = inverse of subnet mask: 0.0.0.255.

35. Which address identifies a host portion of an IPv4 address?

- A. Network ID
- B. Broadcast ID
- C. Host ID
- D. Default Gateway

Answer: C

Explanation: Host ID identifies the specific host within the network.

36. **Scenario:** A router interface is set to IP 10.0.0.1/30. How many usable hosts are on that subnet?*

- A. 0
- B. 1
- C. 2
- D. 254

Answer: C

Explanation: /30 gives 4 addresses: network, 2 hosts, broadcast → 2 usable hosts.

37. **Which IP (with mask) would be a suitable gateway for network 192.168.10.0/26?**

- A. 192.168.10.0/26
- B. 192.168.10.63/26
- C. 192.168.10.1/26
- D. 192.168.10.64/26

Answer: C

Explanation: .1 is usable host; .0 is network, .63 is broadcast for /26 (0–63).

38. **Which address type is 255.255.255.255 on IPv4?**

- A. Unicast
- B. Limited broadcast
- C. Multicast
- D. Anycast

Answer: B

Explanation: 255.255.255.255 is the limited broadcast address (local network only).

39. **Which rule is true for a default gateway?**

- A. It must be in a different subnet than the host
- B. It must be in the same subnet as the host
- C. It must be the router's physical MAC address only
- D. It must be a DNS server

Answer: B

Explanation: Default gateway must be reachable — i.e., in same subnet to forward off-net traffic.

40. **Scenario (difficulty ↑):** A host has IP 10.10.5.77/25. What is the network ID?

- A. 10.10.5.0
- B. 10.10.5.128
- C. 10.10.5.64
- D. 10.10.5.192

Answer: C

Explanation: /25 splits at .0 and .128; 10.10.5.64–127 block contains .77 → network ID .64.

Section E — Subnetting Practice (41–46)

41. You need at least 30 hosts on a subnet. Which mask provides enough hosts?

- A. /27 (32 addresses)
- B. /28 (16 addresses)
- C. /29 (8 addresses)
- D. /30 (4 addresses)

Answer: A

Explanation: /27 gives 32 addresses → 30 usable hosts (32–2 = 30).

42. What is the broadcast address for 172.16.2.0/26?

- A. 172.16.2.63
- B. 172.16.2.64
- C. 172.16.2.255
- D. 172.16.2.127

Answer: A

Explanation: /26 blocks are 0–63, 64–127... → broadcast of first block is .63.

43. **Scenario:** Company needs 6 subnets from 192.168.1.0/24. What subnet mask should you choose (CIDR) to create at least 6 subnets?

- A. /25
- B. /26
- C. /27
- D. /28

Answer: B

Explanation: /26 yields 4 subnets (not enough). Wait—calculate carefully: Starting /24, borrowing bits: /26 (2 bits) → 4 subnets; /27 (3 bits) → 8 subnets. Minimum to get ≥6 is /27.

Corrected Answer: C

Explanation: /27 (255.255.255.224) creates 8 subnets from /24, satisfying ≥6.

44. Which subnetting concept describes using a single IP network across multiple sizes (variable lengths) in routing?

- A. Classful addressing
- B. VLSM (Variable Length Subnet Mask)
- C. CIDR only for IPv6
- D. NAT

Answer: B

Explanation: VLSM allows different subnet masks within the same major network.

45. What is the usable host range for 192.168.5.128/26?

- A. .129 – .190

- B. .129 – .254
- C. .128 – .191
- D. .130 – .189

Answer: A

Explanation: /26 block 128–191 → usable hosts .129–.190 (.128 network, .191 broadcast).

46. **Scenario (difficulty ↑):** You have network 10.0.0.0/8 and need 1000 subnets that each support 200 hosts. Which is the minimal subnet mask that supports 200 hosts per subnet? Which mask will give enough subnets?
- A. /24 for hosts, /16 for subnets
 - B. /24 allows hosts but you can get many subnets (/24 gives 16,777,216 /24s in /8)
 - C. /24 (supports 254 hosts) — insufficient for 200? Actually /24 supports 254 so OK; number of /24 subnets inside /8 = $2^{(16-8)} = 65536$ → more than 1000
 - D. /25 for hosts

Answer: C

Explanation: To support ≥200 hosts, need at least /24 (254 usable). From /8 to /24 yields $2^{(24-8)} = 2^{16} = 65536$ subnets—ample for 1000 subnets.

Section F — IPv6 & MAC Addressing (47–50)

47. **Which IPv6 address type is FE80::/10 reserved for?**

- A. Global Unicast
- B. Link-Local
- C. Multicast
- D. Unique Local

Answer: B

Explanation: FE80::/10 is link-local prefix used on the local link only.

48. **Which IPv6 address begins with FC00::/7?**

- A. Link-Local
- B. Multicast
- C. Unique Local Addresses (ULA)
- D. Global Multicast

Answer: C

Explanation: FC00::/7 (commonly FD00::/8 with L bit set) denotes ULA.

49. **Which of the following is the correct format length for a MAC address?**

- A. 32 bits
- B. 48 bits
- C. 64 bits

D. 128 bits

Answer: B

Explanation: MAC addresses are typically 48 bits (6 bytes), often shown as hex pairs.

50. Which MAC address is a multicast MAC for IPv4 multicast? (Example shown)

A. 00:1A:2B:3C:4D:5E

B. FF:FF:FF:FF:FF:FF

C. 01:00:5E:xx:xx:xx

D. 33:33:xx:xx:xx:xx

Answer: C

Explanation: IPv4 multicast maps to MAC range 01:00:5E:00:00:00 – 01:00:5E:7F:FF:FF.

(Note: D is IPv6 multicast mapping 33:33::/16.)

Part 2 — IP Addressing & Subnetting (50 MCQs)

Topics: IPv4 addressing, Subnet Mask/Wildcard Mask, Default Gateway, Routed/Non-Routed Ports, Subnetting, IPv6 (history, format, address types)

Section A — IPv4 Addressing Fundamentals (1–12)

1. Which of the following IP addresses belongs to Class A by default?

A. 192.168.10.5

B. 172.16.10.5

C. 10.5.6.7

D. 224.5.5.5

Answer: C

Explanation: Class A ranges from 1.0.0.0 to 126.255.255.255.

2. Which of the following represents the default subnet mask for Class B?

- A. 255.255.0.0
- B. 255.0.0.0
- C. 255.255.255.0
- D. 255.255.255.252

Answer: A

Explanation: Class B networks use a /16 mask (255.255.0.0).

3. Which IP address cannot be assigned to a host?

- A. 10.0.0.10
- B. 172.16.5.0
- C. 192.168.1.50
- D. 172.31.10.5

Answer: B

Explanation: .0 is the network ID in any subnet.

4. Which of the following is a valid broadcast address for the 192.168.20.0/24 network?

- A. 192.168.20.1
- B. 192.168.20.254
- C. 192.168.20.255
- D. 192.168.21.0

Answer: C

Explanation: Broadcast address = highest address in the subnet (.255 for /24).

5. What is the valid host range for 192.168.5.0/26?

- A. .1-.62

- B. .0–.63
- C. .64–.126
- D. .1–.63

Answer: A

Explanation: $/26 = 64$ addresses (0–63). Usable hosts = .1–.62.

6. Which of the following is the correct default gateway for host 10.0.1.25/24?

- A. 10.0.0.1
- B. 10.0.1.1
- C. 10.0.2.1
- D. 10.0.1.255

Answer: B

Explanation: Gateway must be in the same subnet (.1 is typical).

7. What is the total number of usable hosts in a /29 subnet?

- A. 6
- B. 8
- C. 14
- D. 30

Answer: A

Explanation: $/29 = 8$ IPs \rightarrow 6 usable (2 reserved for network and broadcast).

8. What is the wildcard mask for 255.255.255.240?

- A. 0.0.0.15
- B. 0.0.0.240
- C. 0.0.15.255
- D. 0.0.255.240

Answer: A

Explanation: Wildcard = inverse of subnet mask $\rightarrow 255 - 240 = 15$.

9. Which IPv4 address class supports the largest number of hosts per network?

- A. Class A
- B. Class B
- C. Class C
- D. Class D

Answer: A

Explanation: Class A = 16 million+ hosts per network (/8 mask).

10. What is the main purpose of the subnet mask?

- A. To define the physical layer medium
- B. To determine the network and host portions of an IP address
- C. To assign MAC addresses
- D. To identify default gateways

Answer: B

Explanation: Subnet mask separates network bits from host bits.

11. A router interface is configured with IP 172.16.8.1/22. What is the broadcast address?

- A. 172.16.8.255
- B. 172.16.11.255
- C. 172.16.12.255
- D. 172.16.7.255

Answer: B

Explanation: /22 covers 172.16.8.0–172.16.11.255.

12. Which IP range is NOT private?

- A. 10.0.0.0–10.255.255.255
- B. 172.16.0.0–172.31.255.255
- C. 192.168.0.0–192.168.255.255
- D. 8.8.8.0–8.8.8.255

Answer: D

Explanation: 8.8.8.0 is public (used by Google DNS).

Section B — Subnetting Practice & Scenarios (13–30)

13. How many subnets are created when you apply a /26 mask to a 192.168.1.0/24 network?

- A. 2
- B. 4
- C. 6
- D. 8

Answer: B

Explanation: Borrowing 2 bits $\rightarrow 2^2 = 4$ subnets.

14. How many usable hosts per subnet in a /27?

- A. 16
- B. 30
- C. 32
- D. 64

Answer: B

Explanation: /27 = 32 IPs, 30 usable.

15. What is the first valid host for 172.16.4.0/22?

- A. 172.16.4.0
- B. 172.16.4.1
- C. 172.16.7.255
- D. 172.16.5.1

Answer: B

Explanation: /22 → first usable after network (.1).

16. You are designing 10 subnets for a /24 network. What mask should you use?

- A. /25
- B. /26
- C. /27
- D. /28

Answer: C

Explanation: /27 gives 8 subnets, /28 gives 16 → choose /28 to meet 10 subnet requirement.

Correct Answer: D

17. What subnet mask provides exactly 2 usable hosts per subnet?

- A. /30
- B. /31
- C. /29
- D. /32

Answer: A

Explanation: /30 → 4 IPs → 2 usable hosts.

18. A host IP is 192.168.50.67/27. What is its subnet ID?

- A. 192.168.50.0
- B. 192.168.50.32
- C. 192.168.50.64
- D. 192.168.50.96

Answer: C

Explanation: /27 blocks of 32 → 64–95 includes .67.

19. What is the broadcast address for 192.168.50.64/27?

- A. 192.168.50.95
- B. 192.168.50.127
- C. 192.168.50.64
- D. 192.168.50.96

Answer: A

Explanation: Each /27 block has 32 addresses → 64–95 → broadcast = .95.

20. You have 192.168.10.0/25. How many usable hosts?

- A. 62
- B. 126
- C. 254
- D. 510

Answer: B

Explanation: /25 → 128 IPs → 126 usable.

21. What is the network address of host 10.10.5.200/20?

- A. 10.10.0.0
- B. 10.10.5.0

- C. 10.10.16.0
- D. 10.10.240.0

Answer: A

Explanation: /20 = 16-block size; 10.10.0.0–10.10.15.255 covers .200.

22. You need 14 hosts per subnet. Which subnet mask should you use?

- A. /28
- B. /29
- C. /30
- D. /31

Answer: A

Explanation: /28 → 16 IPs → 14 usable.

23. A router is assigned 172.20.8.1/21. What is the broadcast address?

- A. 172.20.15.255
- B. 172.20.8.255
- C. 172.20.9.255
- D. 172.20.16.255

Answer: A

Explanation: /21 = block size of 8 → 172.20.8.0–172.20.15.255.

24. How many total subnets can be created from a Class C network if you use a /28 mask?

- A. 8
- B. 16
- C. 32
- D. 64

Answer: B

Explanation: /28 → 4 bits borrowed → $2^4 = 16$ subnets.

25. Scenario: A network engineer wants at least 500 hosts in each subnet from 10.0.0.0/8. Which mask should be used?

- A. /23
- B. /22
- C. /24
- D. /25

Answer: B

Explanation: /22 = 1024 addresses (1022 usable).

26. Scenario: You are given 172.16.0.0/16 and must create at least 400 subnets. What mask is required?

- A. /22
- B. /23
- C. /24
- D. /25

Answer: C

Explanation: Borrowing 8 bits → /24 → 256 subnets. But 400 needed → borrow 9 bits (/25) gives 512 subnets.

Correct Answer: D

27. How many host bits are available in a /23 mask?

- A. 8
- B. 9
- C. 10
- D. 7

Answer: B

Explanation: /23 → $32 - 23 = 9$ host bits → 510 usable hosts.

28. Which of the following represents CIDR notation for subnet mask 255.255.255.192?

- A. /24
- B. /25
- C. /26
- D. /27

Answer: C

Explanation: $255.255.255.192 = /26$.

29. Scenario: Host A (192.168.1.10/25) cannot reach Host B (192.168.1.130/25). Why?

- A. Different broadcast domains
- B. Different subnets
- C. Incorrect gateway
- D. IP duplication

Answer: B

Explanation: /25 divides 192.168.1.0–127 and 128–255. A in first subnet, B in second.

30. What is the block size of a /28 network?

- A. 8
- B. 16
- C. 32
- D. 64

Answer: B

Explanation: $2^4 = 16$ addresses per subnet.

Section C — Routed & Non-Routed Ports (31–37)

31. What is a routed port on a switch?

- A. Port used only for VLANs
- B. Layer-3 port configured with an IP address
- C. Port in access mode
- D. Port in trunk mode

Answer: B

Explanation: Routed ports act like router interfaces, not part of VLANs.

32. Which of the following ports cannot have an IP address assigned?

- A. Routed port
- B. Loopback port
- C. Access port
- D. VLAN interface

Answer: C

Explanation: Access ports are Layer 2 — no IPs.

33. What must be configured to route between VLANs on a multilayer switch?

- A. Trunk ports
- B. Access ports
- C. SVI (Switch Virtual Interface)
- D. STP

Answer: C

Explanation: SVIs (virtual routed interfaces) enable inter-VLAN routing.

34. Scenario: You assign IPs directly to two switch interfaces and connect them to routers. What mode must those interfaces be in?

- A. Access mode
- B. Trunk mode
- C. Routed mode (`no switchport`)
- D. Dynamic desirable

Answer: C

Explanation: `no switchport` converts interface to routed (Layer 3).

35. Which of the following is NOT a routed port characteristic?

- A. Participates in VLANs
- B. Has IP address
- C. Operates at Layer 3
- D. Can use routing protocols

Answer: A

Explanation: Routed ports don't belong to VLANs.

36. Non-routed ports are used for:

- A. Point-to-point WAN links
- B. Access or trunking VLAN traffic
- C. Routing between subnets
- D. Loopback interfaces

Answer: B

Explanation: Non-routed = L2 ports carrying VLAN traffic only.

37. Scenario: Engineer tries to assign IP on switchport Fa0/10 but receives error "Command rejected: interface L2." What should be done?

- A. Enable STP
- B. Use `no switchport` command first
- C. Set it to access VLAN 1
- D. Reload switch

Answer: B

Explanation: Convert interface to routed port before assigning IP.

Section D — IPv6 Fundamentals (38–50)

38. How many bits are in an IPv6 address?

- A. 32
- B. 48
- C. 64
- D. 128

Answer: D

Explanation: IPv6 addresses are 128 bits long.

39. What is the written shorthand for IPv6 address `2001:0DB8:0000:0000:0000:0000:0000:0001`?

- A. 2001:DB8::1
- B. 2001:DB8:0:0:0:0:0:1
- C. 2001::DB8:1
- D. 2001:0DB8::0001

Answer: A

Explanation: Consecutive zeros are compressed as "::".

40. Which type of IPv6 address is equivalent to an IPv4 private address?

- A. Global Unicast

- B. Unique Local
- C. Link-Local
- D. Multicast

Answer: B

Explanation: Unique Local (FC00::/7) = IPv6's private range.

41. Which IPv6 address type begins with FF00::/8?

- A. Multicast
- B. Link-Local
- C. Global Unicast
- D. Anycast

Answer: A

Explanation: FF00::/8 is reserved for multicast.

42. Scenario: A network engineer pings FE80::1 from router R1. The reply is received only on directly connected interface. Why?

- A. Link-local addresses are not routable
- B. TTL expired
- C. Global unicast misconfiguration
- D. ACL blocking

Answer: A

Explanation: FE80::/10 link-local addresses are not forwarded by routers.

43. What are the two main parts of an IPv6 address?

- A. Network ID and Broadcast ID
- B. Network Prefix and Interface ID
- C. Host portion and Loopback portion
- D. Segment ID and Group ID

Answer: B

Explanation: IPv6 = Prefix (network) + Interface ID (host).

44. Which of the following is the IPv6 loopback address?

- A. ::
- B. ::1
- C. FF02::1
- D. FE80::1

Answer: B

Explanation: ::1 is loopback address in IPv6.

45. Which IPv6 address type can identify multiple interfaces but deliver to the nearest one?

- A. Multicast
- B. Anycast
- C. Broadcast
- D. Unicast

Answer: B

Explanation: Anycast delivers to the closest interface (in routing terms).

46. Which of these does not exist in IPv6?

- A. Broadcast
- B. Multicast
- C. Anycast
- D. Unicast

Answer: A

Explanation: IPv6 replaces broadcast with multicast.

47. What prefix is typically assigned automatically to each IPv6 interface?

- A. FE80::/10
- B. FC00::/7
- C. 2000::/3
- D. FF00::/8

Answer: A

Explanation: FE80::/10 = link-local prefix auto-assigned.

48. Which statement about IPv6 global unicast addresses is correct?

- A. They start with FE80::/10
- B. They are routable on the internet
- C. They replace multicast
- D. They are only used locally

Answer: B

Explanation: Global Unicast (2000::/3) are public, internet-routable.

49. How many hexadecimal characters represent one hextet in IPv6?

- A. 2
- B. 4
- C. 8
- D. 16

Answer: B

Explanation: Each hextet = 16 bits = 4 hexadecimal digits.

50. Scenario (advanced): A router interface has IPv6 address

2001:DB8:ACAD:1::1/64. What is its network prefix and interface ID?

- A. Prefix: 2001:DB8:ACAD:: /64; Interface ID: 1::1

B. Prefix: 2001:DB8:ACAD:1:: /64; Interface ID: ::1

C. Prefix: 2001:DB8:: /64; Interface ID: ACAD:1::1

D. Prefix: 2001:DB8:ACAD:1:0:0:0:1/64

Answer: B

Explanation: Prefix = first 64 bits; Interface ID = last 64 bits (::1).



Part 3 – LAN Switching Concepts (50 MCQs with Answers & Explanations)

1. Which statement best describes the function of a Layer 2 switch?

- A. It routes traffic between subnets.
- B. It forwards frames based on MAC addresses.
- C. It assigns IP addresses to clients.
- D. It blocks all broadcasts.

Answer: B

Explanation: Layer 2 switches operate on MAC addresses, forwarding frames within the same broadcast domain.

2. A network engineer connects multiple PCs to a switch. What table does the switch use to forward frames?

- A. ARP Table
- B. Routing Table
- C. MAC Address Table
- D. Neighbor Table

Answer: C

Explanation: The switch maintains a MAC address (CAM) table mapping ports to device MACs.

3. When a switch receives a frame with an unknown destination MAC address, it will:

- A. Drop the frame.
- B. Send it to the router.
- C. Flood it to all ports except the source.
- D. Send it to the default gateway.

Answer: C

Explanation: Unknown unicast frames are flooded within the same VLAN.

4. The process by which a switch learns MAC addresses is known as:

- A. Frame flooding
- B. MAC learning
- C. ARP resolution
- D. Port mapping

Answer: B

Explanation: Switches learn source MAC addresses by reading frame headers.

5. What is the default behavior of a Cisco switch port?

- A. Access port in VLAN 1
- B. Trunk port
- C. Disabled
- D. Routed port

Answer: A

Explanation: Cisco switch ports are access ports by default and belong to VLAN 1.

6. What happens if two devices share the same MAC address on a switch?

- A. Switch disables the port.
- B. MAC address table flaps between ports.
- C. Traffic is load balanced.
- D. Frame duplication occurs.

Answer: B

Explanation: The switch alternates the MAC mapping between ports, causing instability.

7. Which command shows the MAC address table on a Cisco switch?

- A. `show arp`
- B. `show ip interface brief`
- C. `show mac address-table`
- D. `show interfaces`

Answer: C

Explanation: Displays learned MACs, VLAN, and interface associations.

8. What is a VLAN used for?

- A. To segment a LAN into multiple broadcast domains
- B. To increase broadcast traffic
- C. To allow wireless access
- D. To enable routing between subnets

Answer: A

Explanation: VLANs logically separate networks, reducing broadcast traffic.

9. How does a switch identify VLAN membership on a trunk port?

- A. Using IP addresses
- B. Using VLAN tags (802.1Q)
- C. Using MAC addresses
- D. Using broadcast packets

Answer: B

Explanation: 802.1Q adds VLAN tags to Ethernet frames for trunk links.

10. What is the VLAN ID range for normal VLANs?

- A. 1–1001
- B. 1–4094
- C. 2–1005
- D. 1006–4094

Answer: A

Explanation: Normal VLANs are 1–1001; extended VLANs are 1006–4094.

11. Which VLAN is the default management VLAN on a Cisco switch?

- A. VLAN 0
- B. VLAN 1
- C. VLAN 99
- D. VLAN 100

Answer: B

Explanation: VLAN 1 is the default for management, control, and native traffic.

12. Which command creates VLAN 20 on a Cisco switch?

- A. `create vlan 20`
- B. `vlan database 20`
- C. `vlan 20`
- D. `interface vlan 20`

Answer: C

Explanation: The command `vlan 20` from global config mode creates the VLAN.

13. To assign an interface to VLAN 20, which command is used?

- A. `switchport vlan 20`
- B. `switchport access vlan 20`
- C. `assign vlan 20`
- D. `interface vlan 20`

Answer: B

Explanation: The command `switchport access vlan 20` binds the port to VLAN 20.

14. A switchport configured as “trunk” will:

- A. Carry multiple VLANs
- B. Carry only VLAN 1
- C. Disable VLAN tagging
- D. Drop untagged frames

Answer: A

Explanation: Trunks carry multiple VLANs using tagging (802.1Q).

15. What is the default native VLAN on Cisco switches?

- A. VLAN 0
- B. VLAN 1
- C. VLAN 10
- D. VLAN 99

Answer: B

Explanation: By default, VLAN 1 is the native VLAN (untagged VLAN).

16. To view VLAN configuration, you use:

- A. `show vlan`
- B. `show interface vlan`
- C. `show vlan brief`
- D. `show vlan id`

Answer: C

Explanation: `show vlan brief` lists VLAN IDs, names, and assigned ports.

17. What is the purpose of Spanning Tree Protocol (STP)?

- A. Prevents IP conflicts
- B. Prevents Layer 2 loops
- C. Balances routing traffic
- D. Manages VLANs

Answer: B

Explanation: STP prevents broadcast storms by blocking redundant paths.

18. Which IEEE standard defines STP?

- A. 802.1X
- B. 802.1Q
- C. 802.1D
- D. 802.3u

Answer: C

Explanation: IEEE 802.1D defines the original STP.

19. Which switch is elected as the root bridge in STP?

- A. The one with highest bridge ID
- B. The one with lowest bridge ID
- C. The first switch powered on
- D. The one with most ports

Answer: B

Explanation: Root bridge = lowest Bridge ID (priority + MAC address).

20. Default bridge priority in STP is:

- A. 32768
- B. 4096
- C. 8192
- D. 65535

Answer: A

Explanation: Default bridge priority = 32768. Lower is preferred.

21. If all switches have the same priority, what determines the root bridge?

- A. Lowest IP address
- B. Lowest MAC address
- C. Highest port number
- D. Switch name

Answer: B

Explanation: Lowest MAC address wins in a tie.

22. STP port states (in order) are:

- A. Blocking → Listening → Learning → Forwarding
- B. Forwarding → Listening → Learning → Blocking
- C. Listening → Blocking → Forwarding
- D. Disabled → Forwarding

Answer: A

Explanation: STP transitions through these states to prevent loops.

23. RSTP differs from STP by:

- A. Operating on Layer 3
- B. Faster convergence
- C. Using VLAN tagging
- D. Removing port roles

Answer: B

Explanation: RSTP (802.1w) converges faster by reducing transition time.

24. PortFast is used to:

- A. Speed up STP convergence on access ports
- B. Disable trunking
- C. Enable BPDU guard
- D. Block VLAN 1

Answer: A

Explanation: PortFast allows access ports to enter forwarding state immediately.

25. What is BPDU Guard used for?

- A. To protect against root bridge takeover
- B. To prevent unauthorized VLANs
- C. To detect duplicate MACs
- D. To secure routing tables

Answer: A

Explanation: BPDU Guard disables ports that receive BPDUs, preventing rogue switches.

26. A network engineer configures two switches with trunk links, but VLAN 10 traffic doesn't pass. What is the most likely cause?

- A. Native VLAN mismatch
- B. VLAN 10 not allowed on the trunk
- C. Port security enabled
- D. Incorrect IP address

Answer: B

Explanation: VLANs must be explicitly allowed on trunk ports using `switchport trunk allowed vlan` command.

27. Which command enables a trunk on interface Gi0/1?

- A. `switchport mode trunk`
- B. `switchport trunk enable`
- C. `trunk on`
- D. `vlan trunk Gi0/1`

Answer: A

Explanation: `switchport mode trunk` sets the interface to carry multiple VLANs using 802.1Q tagging.

28. The default encapsulation for VLAN tagging on Cisco switches is:

- A. ISL
- B. 802.1Q
- C. VTP
- D. MPLS

Answer: B

Explanation: 802.1Q is the current default VLAN tagging protocol; ISL is deprecated.

29. What happens if native VLANs are mismatched on a trunk?

- A. Trunk shuts down
- B. Traffic loops occur
- C. Unintended VLAN leakage
- D. VLAN 1 becomes active

Answer: C

Explanation: Mismatched native VLANs may cause untagged frames to leak between VLANs.

30. Which protocol is used to automatically configure VLANs between switches?

- A. CDP
- B. VTP
- C. LLDP
- D. STP

Answer: B

Explanation: VLAN Trunking Protocol (VTP) advertises and manages VLAN information across switches.

31. In VTP, which mode allows the switch to create, modify, and delete VLANs?

- A. Client
- B. Server
- C. Transparent
- D. Passive

Answer: B

Explanation: VTP Server mode allows VLAN creation and synchronization with clients.

32. A switch configured as VTP client can:

- A. Modify VLANs
- B. Only receive VLAN updates
- C. Create extended VLANs
- D. Operate without a domain

Answer: B

Explanation: VTP clients receive updates from servers but cannot modify VLAN configuration.

33. Which command verifies trunking on an interface?

- A. `show vlan brief`
- B. `show interface trunk`
- C. `show interface switchport`
- D. `show vlan`

Answer: B

Explanation: `show interface trunk` displays active trunk ports and allowed VLANs.

34. Which command shows EtherChannel status?

- A. `show etherchannel summary`
- B. `show channel-group`
- C. `show interface port-channel`
- D. `show spanning-tree`

Answer: A

Explanation: `show etherchannel summary` displays bundle interfaces and status.

35. EtherChannel combines:

- A. Multiple logical links into one physical
- B. Multiple physical links into one logical
- C. VLANs into subnets
- D. IP addresses into a single gateway

Answer: B

Explanation: EtherChannel aggregates physical links for redundancy and increased bandwidth.

36. Which protocols can negotiate EtherChannel automatically?

- A. STP & LLDP
- B. PAgP & LACP
- C. CDP & DTP
- D. RIP & OSPF

Answer: B

Explanation: Cisco uses PAgP (proprietary) and LACP (IEEE 802.3ad) for link aggregation negotiation.

37. In EtherChannel, the logical interface created is known as:

- A. VLAN interface
- B. Loopback interface
- C. Port-channel interface
- D. Tunnel interface

Answer: C

Explanation: The combined logical interface is referred to as a *Port-channel*.

38. A network admin configures `channel-group 1 mode on` on both switches. Which protocol is used?

- A. LACP
- B. PAgP
- C. Static (EtherChannel on)
- D. DTP

Answer: C

Explanation: `mode on` creates a static EtherChannel without negotiation.

39. Which command verifies LACP negotiation status?

- A. `show lacp neighbor`
- B. `show etherchannel port-channel`
- C. `show etherchannel summary`
- D. `show lacp interface`

Answer: C

Explanation: The summary output shows whether the bundle uses LACP ("L") or PAgP ("P").

40. Which benefit does EtherChannel provide?

- A. VLAN segmentation
- B. Redundant links with load-balancing
- C. Broadcast suppression
- D. Lower latency

Answer: B

Explanation: EtherChannel provides redundancy and load balancing across multiple links.

41. In PVST+, each VLAN has:

- A. A separate STP instance
- B. A shared STP instance
- C. No STP instance
- D. A shared BPDU ID

Answer: A

Explanation: Per-VLAN Spanning Tree Plus (PVST+) runs a unique STP instance per VLAN.

42. Which STP version allows faster convergence without configuration changes?

- A. PVST+
- B. RSTP (802.1w)
- C. MSTP (802.1s)
- D. CST

Answer: B

Explanation: Rapid Spanning Tree Protocol provides sub-second convergence compared to STP.

43. Which STP port role forwards traffic toward the root bridge?

- A. Root Port
- B. Designated Port
- C. Alternate Port
- D. Backup Port

Answer: A

Explanation: Root Ports are the lowest-cost path toward the root bridge.

44. The STP port that forwards traffic away from the root toward a segment is the:

- A. Designated Port
- B. Root Port
- C. Alternate Port
- D. Blocked Port

Answer: A

Explanation: The Designated Port forwards frames to the segment.

45. If a root port fails, RSTP quickly transitions which port to forwarding?

- A. Backup Port
- B. Alternate Port
- C. Disabled Port
- D. Blocking Port

Answer: B

Explanation: RSTP uses an Alternate Port to immediately take over after failure.

46. A switch in MSTP domain can group multiple VLANs into:

- A. Instances
- B. Trunks
- C. Ports
- D. Channels

Answer: A

Explanation: MSTP (802.1s) maps VLANs into logical *instances* for shared STP calculations.

47. What is the default STP priority increment per VLAN?

- A. 4096
- B. 32768
- C. 8192
- D. 1024

Answer: A

Explanation: Bridge IDs increment in steps of 4096 per VLAN ID.

48. Which command verifies STP root bridge and port roles?

- A. `show spanning-tree`
- B. `show vlan`
- C. `show interfaces trunk`
- D. `show mac address-table`

Answer: A

Explanation: Displays root bridge, cost, and port roles per VLAN/STP instance.

49. A port configured as “edge” in RSTP is equivalent to:

- A. Trunk port
- B. PortFast port
- C. Root port
- D. Backup port

Answer: B

Explanation: An *edge port* connects to end-devices and transitions immediately to forwarding (PortFast behavior).

50. A switch shows frequent STP topology changes. What’s the most likely cause?

- A. Loop-free design
- B. Flapping access ports
- C. Static routes
- D. Incorrect MTU size

Answer: B

Explanation: Topology changes often occur when PortFast access ports go up/down due to end-devices reconnecting.

Part 4 – Cisco IOS Basics & Device Configuration (50 MCQs with Answers & Explanations)

1. Which of the following is the default prompt for user EXEC mode on a Cisco router?

- A. Router#
- B. Router>
- C. Router(config)#
- D. Router(config-if)#

Answer: B

Explanation: The ">" prompt indicates user EXEC mode, allowing limited monitoring commands.

2. Which command allows you to enter privileged EXEC mode?

- A. enable
- B. configure
- C. exec privilege
- D. admin

Answer: A

Explanation: The `enable` command switches to privileged EXEC mode, indicated by Router#.

3. Which prompt appears when you are in global configuration mode?

- A. Router>
- B. Router#
- C. Router(config)#
- D. Router(config-if)#

Answer: C

Explanation: Global configuration mode is used for overall device configuration.

4. To configure a specific interface (GigabitEthernet0/0), use the command:

- A. `int gi0/0`
- B. `interface gi0/0`
- C. `config gi0/0`
- D. `config-if gi0/0`

Answer: B

Explanation: The `interface` command is followed by the interface ID to enter interface config mode.

5. What command sets the router's hostname to "BRANCH1"?

- A. `hostname BRANCH1`
- B. `setname BRANCH1`
- C. `name BRANCH1`
- D. `routername BRANCH1`

Answer: A

Explanation: The global command `hostname BRANCH1` changes the router name prompt.

6. Which command sets a privileged EXEC password (non-encrypted)?

- A. `enable password <password>`
- B. `enable secret <password>`
- C. `set password <password>`
- D. `exec password <password>`

Answer: A

Explanation: `enable password` sets the plain-text password for privileged access.

7. Which command encrypts privileged EXEC passwords?

- A. `enable password`
- B. `enable secret`
- C. `service encrypt`
- D. `set enable password`

Answer: B

Explanation: `enable secret` uses an MD5 hash for encrypted storage of privileged passwords.

8. Which command hides all plaintext passwords in the running configuration?

- A. `service password-encryption`
- B. `encrypt passwords`
- C. `hide passwords`
- D. `crypto enable`

Answer: A

Explanation: `service password-encryption` encrypts all plain-text passwords using a weak algorithm.

9. A router has both “enable password” and “enable secret” configured. Which takes precedence?

- A. Enable password
- B. Enable secret
- C. Both
- D. None

Answer: B

Explanation: The enable secret overrides the plain-text enable password.

10. Which command saves the running configuration to NVRAM?

- A. `copy running-config startup-config`
- B. `save`
- C. `write memory`
- D. Both A and C

Answer: D

Explanation: Both commands store the current configuration in NVRAM for persistence after reboot.

11. To display the current running configuration, use:

- A. `show version`
- B. `show interfaces`
- C. `show running-config`
- D. `show config`

Answer: C

Explanation: Displays active configuration loaded in RAM.

12. Which command displays the saved startup configuration?

- A. `show startup-config`
- B. `show config`
- C. `display nvram`
- D. `show boot`

Answer: A

Explanation: Shows the configuration file stored in NVRAM.

13. What command removes the startup configuration?

- A. `delete startup-config`
- B. `erase startup-config`
- C. `clear nvram`
- D. Both B and C

Answer: D

Explanation: Both commands erase NVRAM content (startup-config).

14. Which key combination moves you to privileged EXEC mode from any prompt?

- A. `Ctrl+Z`
- B. `Ctrl+C`
- C. `Ctrl+E`
- D. `Esc`

Answer: A

Explanation: `Ctrl+Z` exits any sub-mode and returns to privileged EXEC mode.

15. Which command sets the clock on a Cisco device manually?

- A. `clock set`
- B. `set clock`
- C. `ntp clock`
- D. `time set`

Answer: A

Explanation: Use syntax: `clock set HH:MM:SS DAY MONTH YEAR`.

16. To synchronize the router's clock with an NTP server, use:

- A. `ntp master`
- B. `ntp server <ip-address>`
- C. `clock ntp <ip>`
- D. `sync ntp`

Answer: B

Explanation: Defines an external NTP source for time synchronization.

17. What command shows the current time and date?

- A. `show ntp status`
- B. `show clock`
- C. `display time`
- D. `show system-time`

Answer: B

Explanation: Displays the current time and synchronization status.

18. Which mode allows you to configure a password for console access?

- A. Line configuration mode
- B. Interface configuration mode
- C. Global configuration mode
- D. Privileged mode

Answer: A

Explanation: Use `line console 0` to set console line password.

19. To configure a password for console access, use:

- A. `password <text>`
- B. `enable password <text>`
- C. `login password <text>`
- D. `username console <text>`

Answer: A

Explanation: Inside `line console 0`, use `password` and `login` commands.

20. Which command enables login authentication on the console line?

- A. `enable login`
- B. `login`
- C. `authenticate on`
- D. `console enable`

Answer: B

Explanation: The `login` command enables password checking when accessing the console.

21. To set up user authentication via local database, use:

- A. `login local`
- B. `local login`
- C. `user-auth local`
- D. `enable user-db`

Answer: A

Explanation: `login local` instructs the device to authenticate using locally defined usernames.

22. Which command creates a local user with privilege level 15?

- A. `username admin password cisco`
- B. `username admin privilege 15 secret cisco`
- C. `user add admin level 15`
- D. `create admin 15 secret cisco`

Answer: B

Explanation: Creates an administrative user with full privileges.

23. What privilege level has full access to all router commands?

- A. 1
- B. 10
- C. 15
- D. 0

Answer: C

Explanation: Privilege level 15 = full administrative access.

24. To back up a configuration file to a TFTP server, use:

- A. `copy running-config tftp`
- B. `backup running tftp`
- C. `save tftp`
- D. `tftp copy running`

Answer: A

Explanation: Copies the current configuration to a remote TFTP server.

25. To restore a configuration from TFTP, use:

- A. `copy tftp running-config`
- B. `copy tftp startup-config`
- C. Both A and B
- D. `load tftp config`

Answer: C

Explanation: Either command can load configuration files from a TFTP server.

26. Which command assigns an IPv4 address to interface GigabitEthernet 0/0?

- A. `ip address 192.168.10.1`
- B. `ip address 192.168.10.1 255.255.255.0`
- C. `interface ip 192.168.10.1/24`
- D. `set ip 192.168.10.1 mask 255.255.255.0`

Answer: B

Explanation: The correct syntax includes both IP address and subnet mask.

27. To activate the configured interface, which command is required?

- A. `enable interface`
- B. `no shutdown`
- C. `activate`
- D. `interface up`

Answer: B

Explanation: All router interfaces are shutdown by default and must be enabled manually.

28. Which command verifies IPv4 connectivity from the router CLI?

- A. `show interface`
- B. `traceroute`
- C. `ping`
- D. `show ip route`

Answer: C

Explanation: `ping` tests Layer-3 reachability between devices.

29. To describe an interface purpose for documentation, use:

- A. `info "Uplink Port"`
- B. `description Uplink Port`
- C. `set comment Uplink`
- D. `name Uplink`

Answer: B

Explanation: The `description` command adds a note visible in `show running-config`.

30. What command assigns an IPv6 address on interface G0/0?

- A. `ipv6 address 2001:DB8:1::1/64`
- B. `ip address ipv6 2001:DB8:1::1/64`
- C. `address v6 2001:DB8:1::1/64`
- D. `set ipv6 2001:DB8:1::1 64`

Answer: A

Explanation: Cisco IOS uses the `ipv6 address` keyword inside interface configuration mode.

31. Which command enables IPv6 routing on a Cisco router?

- A. `ipv6 enable`
- B. `ipv6 unicast-routing`
- C. `ip routing v6`
- D. `enable ipv6 route`

Answer: B

Explanation: Must be entered in global configuration mode to allow IPv6 forwarding.

32. Which command verifies assigned IPv6 addresses on interfaces?

- A. `show ipv6 interface brief`
- B. `show ipv6 address`
- C. `display ipv6 interfaces`
- D. `show interface v6`

Answer: A

Explanation: Displays concise interface status with IPv6 addresses.

33. What command displays detailed interface statistics?

- A. `show interface`
- B. `show ip interface`
- C. `show interface status`
- D. All of the above

Answer: D

Explanation: Different forms show varying levels of Layer 1–3 details.

34. The “line protocol down” message usually indicates a problem at which OSI layer?

- A. Layer 1
- B. Layer 2
- C. Layer 3
- D. Layer 4

Answer: B

Explanation: It signals a data-link layer (encapsulation/keepalive) issue.

35. Which command sets the clock rate on a DCE serial interface?

- A. `set clock 64000`
- B. `clock rate 64000`
- C. `speed 64000`
- D. `bandwidth 64`

Answer: B

Explanation: Only the DCE end defines the clock rate.

36. To set the encapsulation type on a serial interface, use:

- A. `encapsulation ppp`
- B. `set encapsulation`
- C. `ip encapsulation`
- D. `frame ppp`

Answer: A

Explanation: Configures the data-link protocol (PPP, HDLC, Frame-Relay).

37. Which command adjusts keepalive intervals on an interface?

- A. `keepalive 10`
- B. `set keepalive 10`
- C. `encapsulation keepalive 10`
- D. `interface keepalive 10`

Answer: A

Explanation: Default is 10 seconds; can be modified per interface.

38. Which command verifies Layer 2 encapsulation type?

- A. `show interfaces serial0/0`
- B. `show ip interface brief`
- C. `show encapsulation`
- D. `show frame`

Answer: A

Explanation: Detailed output includes encapsulation and keepalive state.

39. What command shows the configured bandwidth on a serial link?

- A. `show interface serial`
- B. `show controllers serial`
- C. `show bandwidth`
- D. `show clock`

Answer: A

Explanation: Displayed under the interface status lines.

40. Which IOS command enables interface debugging?

- A. `debug interface`
- B. `debug all`
- C. `debug ip packet`
- D. `debug events`

Answer: A

Explanation: Allows real-time interface event monitoring.

41. To disable all active debugs, use:

- A. `no debug all` or `undebug all`
- B. `debug off`
- C. `clear debug`
- D. `exit debug`

Answer: A

Explanation: Both stop all debugging processes to avoid CPU load.

42. Which command shows brief status of all interfaces (up/down, IP)?

- A. `show interfaces summary`
- B. `show ip interface brief`
- C. `show ip route`
- D. `show controllers`

Answer: B

Explanation: Provides concise operational overview.

43. To clear interface counters, use:

- A. `clear counters`
- B. `reset interface`
- C. `clear interface stats`
- D. `show interface reset`

Answer: A

Explanation: Resets all traffic statistics for performance checks.

44. Which command displays device uptime and version info?

- A. `show system`
- B. `show version`
- C. `show run`
- D. `show boot`

Answer: B

Explanation: Lists IOS version, uptime, and memory details.

45. To copy configuration from startup to running, use:

- A. `copy startup-config running-config`
- B. `load startup-config`
- C. `merge startup-config`
- D. `boot config`

Answer: A

Explanation: Applies the saved configuration into active RAM.

46. When using SSH for remote management, which prerequisite must exist?

- A. Configured domain name and RSA keys
- B. Only password set
- C. VTY lines configured
- D. SNMP enabled

Answer: A

Explanation: SSH requires hostname, domain-name, and RSA key pair.

47. Command to generate RSA keys for SSH:

- A. `crypto key generate rsa`
- B. `ssh key create`
- C. `generate rsa`
- D. `keypair create rsa`

Answer: A

Explanation: Creates the cryptographic keys used by SSH.

48. Which command verifies SSH status?

- A. `show ip ssh`
- B. `show ssh`
- C. `show crypto ssh`
- D. Both A and B

Answer: D

Explanation: Both commands display SSH server and session information.

49. Which command is used to reload the router immediately?

- A. `reboot now`
- B. `reload`
- C. `restart`
- D. `system reset`

Answer: B

Explanation: `reload` restarts the router, optionally with delay or confirmation.

50. After making major changes, what's the best practice before reload?

- A. Save configuration using `copy running-config startup-config`
- B. Backup via TFTP
- C. Verify with `show run`
- D. All of the above

Answer: D

Explanation: Always save, backup, and verify before reloading to avoid config loss.

Part 5 – VLANs, Spanning Tree, and EtherChannel (50 MCQs with Answers & Explanations)

1. What is the main purpose of VLANs in a switched network?

- A. Increase bandwidth
- B. Reduce routing overhead
- C. Segment broadcast domains
- D. Combine multiple subnets

Answer: C

Explanation: VLANs logically segment a network into smaller broadcast domains.

2. What is the default VLAN for all Cisco switch ports?

- A. VLAN 0
- B. VLAN 1
- C. VLAN 99
- D. VLAN 100

Answer: B

Explanation: VLAN 1 is the default management VLAN for all switch ports.

3. Which command creates VLAN 10 on a Cisco switch?

- A. `vlan 10`
- B. `switchport vlan 10`
- C. `create vlan 10`
- D. `interface vlan 10`

Answer: A

Explanation: VLANs are created in global configuration mode using `vlan <id>`.

4. How can you assign a switch port to VLAN 10?

- A. `vlan access 10`
- B. `switchport access vlan 10`
- C. `interface vlan 10`
- D. `ip vlan 10`

Answer: B

Explanation: In interface config mode, `switchport access vlan <id>` assigns the port to a VLAN.

5. Which command shows VLAN assignments and port membership?

- A. `show vlan`
- B. `show vlan brief`
- C. `show interfaces switchport`
- D. Both A and B

Answer: D

Explanation: Both display VLAN information, though `brief` provides a compact summary.

6. What type of VLAN is used to carry traffic between switches?

- A. Access VLAN
- B. Management VLAN
- C. Native VLAN
- D. Trunk VLAN

Answer: D

Explanation: Trunk links carry multiple VLANs using 802.1Q encapsulation.

7. Which encapsulation standard does Cisco use for VLAN trunking?

- A. ISL
- B. 802.1Q
- C. PPP
- D. HDLC

Answer: B

Explanation: IEEE 802.1Q is the industry standard for VLAN tagging.

8. In 802.1Q, what is the purpose of the Native VLAN?

- A. Handles untagged traffic on a trunk link
- B. Carries all tagged VLANs
- C. Manages STP operations
- D. Reserved for voice VLANs

Answer: A

Explanation: The native VLAN forwards untagged frames on trunk ports.

9. Default native VLAN on Cisco switches is:

- A. 0
- B. 1
- C. 100
- D. 99

Answer: B

Explanation: VLAN 1 is the default native VLAN unless reconfigured.

10. Which command enables trunking on an interface?

- A. `switchport mode access`
- B. `switchport mode trunk`
- C. `vlan trunk enable`
- D. `trunking on`

Answer: B

Explanation: Sets the port to trunk mode, carrying multiple VLANs.

11. Which command limits VLANs allowed on a trunk?

- A. `switchport allowed vlan <id>`
- B. `switchport trunk allowed vlan <list>`
- C. `allow vlan <range>`
- D. `vlan range trunk`

Answer: B

Explanation: Controls which VLANs are transmitted on the trunk.

12. Which VLAN type is used to carry VoIP traffic?

- A. Access VLAN
- B. Voice VLAN
- C. Data VLAN
- D. Trunk VLAN

Answer: B

Explanation: Cisco IP phones use a separate voice VLAN for QoS optimization.

13. What is the command to assign a voice VLAN to a switch port?

- A. `switchport voice vlan 20`
- B. `vlan voice 20`
- C. `ip voice vlan 20`
- D. `switchport data voice 20`

Answer: A

Explanation: Defines a VLAN for IP phone traffic.

14. What command verifies trunk status and VLANs allowed?

- A. `show trunk`
- B. `show interfaces trunk`
- C. `show vlan trunk`
- D. `show switch trunk`

Answer: B

Explanation: Displays trunk interfaces and VLAN configuration.

15. What device enables communication between two VLANs?

- A. Switch
- B. Router or Layer 3 Switch
- C. Hub
- D. Bridge

Answer: B

Explanation: Inter-VLAN routing is done by routers or multilayer switches.

16. Which command creates an SVI (Switched Virtual Interface) for VLAN 10?

- A. `interface vlan 10`
- B. `vlan interface 10`
- C. `ip interface 10`
- D. `switchport vlan 10`

Answer: A

Explanation: SVIs allow Layer 3 communication between VLANs.

17. What must be done to enable routing between VLANs on a Layer 3 switch?

- A. `ip routing`
- B. `vlan routing enable`
- C. `switchport mode router`
- D. `enable vlan routing`

Answer: A

Explanation: Enables inter-VLAN routing on the switch.

18. Which command assigns an IP address to VLAN 10 SVI?

- A. `ip address 192.168.10.1 255.255.255.0`
- B. `vlan ip 192.168.10.1 255.255.255.0`
- C. `ip interface vlan 10`
- D. `interface ip vlan10`

Answer: A

Explanation: Standard IP command is used inside `interface vlan 10`.

19. Which command verifies VLAN interface status?

- A. `show ip interface brief`
- B. `show vlan brief`
- C. `show interfaces vlan 10`
- D. Both A and C

Answer: D

Explanation: Both commands can confirm SVI status and IP.

20. A user on VLAN 20 cannot reach another on VLAN 10. What's likely missing?

- A. VLAN created
- B. Trunk link
- C. IP routing
- D. DHCP server

Answer: C

Explanation: Without routing, VLANs are isolated broadcast domains.

21. Which protocol prevents Layer 2 loops in a switched network?

- A. CDP
- B. VTP
- C. STP
- D. DTP

Answer: C

Explanation: Spanning Tree Protocol detects and blocks redundant paths.

22. What is the default STP mode on modern Cisco switches?

- A. PVST+
- B. CST
- C. MST
- D. RSTP

Answer: A

Explanation: Cisco's default is Per-VLAN Spanning Tree Plus (PVST+).

23. What is the root bridge election criterion in STP?

- A. Highest MAC address
- B. Lowest Bridge ID (Priority + MAC)
- C. Highest Bridge Priority
- D. Lowest Path Cost

Answer: B

Explanation: Root bridge = lowest Bridge ID (priority + MAC address).

24. What is the default STP priority value on Cisco switches?

- A. 0
- B. 32768
- C. 4096
- D. 65535

Answer: B

Explanation: Default STP bridge priority is 32768.

25. Which command changes STP priority for VLAN 10 to 24576?

- A. `spanning-tree vlan 10 priority 24576`
- B. `set stp vlan 10 24576`
- C. `spanning vlan priority 24576`
- D. `spanning-tree set 24576`

Answer: A

Explanation: Defines VLAN-specific STP priority.

26. Which of the following STP port states forwards traffic and learns MAC addresses?

- A. Blocking
- B. Listening
- C. Learning
- D. Forwarding

Answer: D

Explanation: The Forwarding state actively sends and receives frames and learns MACs.

27. What are the two STP port roles on the root bridge?

- A. Root and Designated
- B. Root and Alternate
- C. Designated and Backup
- D. None

Answer: A

Explanation: The root bridge's ports are always designated ports, and other switches identify root ports to reach it.

28. What determines a switch's root port in STP?

- A. Lowest MAC address
- B. Lowest path cost to the root bridge
- C. Highest priority
- D. Random selection

Answer: B

Explanation: Each non-root switch chooses its root port based on the lowest total path cost to the root bridge.

29. What is the default STP path cost for a 1-Gigabit Ethernet link?

- A. 4
- B. 10
- C. 19
- D. 100

Answer: C

Explanation: IEEE standard path cost = 19 for 1 Gbps links (short path cost method).

30. What happens when the root bridge fails in an STP topology?

- A. Network goes down permanently
- B. STP recalculates and elects a new root bridge
- C. All ports block
- D. VLANs are deleted

Answer: B

Explanation: STP dynamically re-elects a new root to restore loop-free paths.

31. Which STP version converges fastest?

- A. STP (802.1D)
- B. PVST+
- C. RSTP (802.1w)
- D. MSTP (802.1s)

Answer: C

Explanation: Rapid Spanning Tree Protocol (RSTP) provides sub-second convergence.

32. Which STP port role is introduced in RSTP but not in traditional STP?

- A. Root
- B. Designated
- C. Alternate
- D. Disabled

Answer: C

Explanation: Alternate and Backup roles were added in RSTP for rapid recovery.

33. How often does a switch send BPDU messages by default?

- A. Every 1 second
- B. Every 2 seconds
- C. Every 5 seconds
- D. Every 10 seconds

Answer: B

Explanation: BPDU messages are sent every 2 seconds by default.

34. What happens if two switches have the same STP priority?

- A. Both become root
- B. Lowest MAC address becomes root
- C. Highest MAC address becomes root
- D. Random selection

Answer: B

Explanation: The switch with the lowest MAC address wins in a tie.

35. Which STP mode supports multiple VLANs within a single instance?

- A. PVST+
- B. RSTP
- C. MSTP
- D. CST

Answer: C

Explanation: Multiple Spanning Tree Protocol (MSTP) reduces CPU load by grouping VLANs.

36. What is the main advantage of PVST+ over traditional STP?

- A. Single instance for all VLANs
- B. Supports faster convergence
- C. Per-VLAN spanning tree instances for load balancing
- D. Uses fewer BPDUs

Answer: C

Explanation: PVST+ allows different VLANs to use different root bridges for load balancing.

37. What is the default STP mode on Cisco Catalyst switches (modern IOS)?

- A. PVST+
- B. RSTP
- C. MST
- D. CST

Answer: B

Explanation: Rapid PVST+ (Cisco's RSTP variant) is the default on modern switches.

38. Which command displays STP information for VLAN 10?

- A. `show spanning-tree vlan 10`
- B. `show stp 10`
- C. `show vlan stp 10`
- D. `show vlan-tree 10`

Answer: A

Explanation: This command provides detailed per-VLAN STP info.

39. Which command enables RSTP on a Cisco switch?

- A. `spanning-tree mode rapid-pvst`
- B. `spanning-tree enable rstp`
- C. `spanning-tree rapid`
- D. `spanning-tree version 2`

Answer: A

Explanation: Enables Cisco's Rapid PVST+ mode globally.

40. Which STP port state is unique to RSTP?

- A. Forwarding
- B. Discarding
- C. Learning
- D. Listening

Answer: B

Explanation: RSTP combines Blocking, Listening, Disabled into one Discarding state.

41. What command sets a switch as root for VLAN 1?

- A. `spanning-tree vlan 1 root primary`
- B. `spanning-tree root vlan 1`
- C. `stp vlan 1 primary`
- D. `spanning-tree vlan 1 priority 0`

Answer: A

Explanation: Sets STP priority to a lower value (typically 24576) to make it root.

42. Which Cisco protocol automates EtherChannel configuration between switches?

- A. LACP
- B. DTP
- C. PAgP
- D. VTP

Answer: C

Explanation: Port Aggregation Protocol (PAgP) is Cisco-proprietary; LACP is IEEE standard.

43. Which two modes form an EtherChannel automatically using LACP?

- A. Desirable–Desirable
- B. Active–Active
- C. Auto–Desirable
- D. Active–Passive

Answer: D

Explanation: In LACP, Active–Passive or Active–Active form a bundle.

44. Which two modes form an EtherChannel using Cisco PAgP?

- A. Active–Passive
- B. Desirable–Auto
- C. Active–Desirable
- D. Auto–Auto

Answer: B

Explanation: In PAgP, Desirable–Auto or Desirable–Desirable work; Auto–Auto does not.

45. Which command configures EtherChannel manually without negotiation protocol?

- A. `channel-group 1 mode on`
- B. `channel-group 1 mode active`
- C. `channel-group 1 mode desirable`
- D. `etherchannel on`

Answer: A

Explanation: Mode on forms a static EtherChannel without LACP or PAgP.

46. What command verifies EtherChannel bundle status?

- A. `show etherchannel summary`
- B. `show interfaces etherchannel`
- C. `show port-channel`
- D. `show link-aggregation`

Answer: A

Explanation: Displays active channels, ports, and protocol used.

47. Which command displays load-balancing method for EtherChannel?

- A. `show etherchannel load-balance`
- B. `show etherchannel summary`
- C. `show etherchannel balance`
- D. `show channel load`

Answer: A

Explanation: Displays the hash method (e.g., src-dst-ip, src-dst-mac).

48. Which command sets EtherChannel load balancing to use source and destination IPs?

- A. `port-channel load-balance src-dst-ip`
- B. `etherchannel load-balance ip`
- C. `channel-group balance ip`
- D. `switchport load-balance src-dst-ip`

Answer: A

Explanation: Configures the global load-balancing algorithm.

49. What is a benefit of EtherChannel?

- A. Increases bandwidth and redundancy
- B. Reduces latency only
- C. Prevents loops
- D. Converts Layer 2 to Layer 3

Answer: A

Explanation: Combines multiple physical links for higher throughput and fault tolerance.

50. If one link in an EtherChannel fails, what happens?

- A. Whole channel goes down
- B. STP blocks all links
- C. Remaining links carry traffic
- D. Channel must be reconfigured

Answer: C

Explanation: EtherChannel provides link redundancy—remaining links stay active automatically.

Part 6 – Routing Protocols (RIP, OSPF, EIGRP, BGP & Administrative Distance)

1. Which statement best describes a routing protocol?

- A. It defines how data is encapsulated on a network.
- B. It determines the best path for data packets between networks.
- C. It connects end devices to the same broadcast domain.
- D. It handles encryption of user data.

Answer: B

Explanation: Routing protocols exchange routes and determine optimal paths between networks.

2. What is the purpose of the routing table?

- A. To store IP addresses of directly connected hosts.
- B. To list all possible routes and the next-hop information.
- C. To maintain ARP mappings.
- D. To store DNS records.

Answer: B

Explanation: A routing table contains destination networks and next-hop information used to forward packets.

3. Which routing protocol uses hop count as its metric?

- A. OSPF
- B. EIGRP
- C. RIP
- D. BGP

Answer: C

Explanation: RIP uses hop count; the maximum allowed is 15 hops.

4. What is the administrative distance of a directly connected route?

- A. 0
- B. 1
- C. 90
- D. 120

Answer: A

Explanation: Directly connected routes have the highest priority (AD = 0).

5. What does EIGRP use to measure path efficiency?

- A. Hop count
- B. Bandwidth and delay
- C. Cost
- D. Reliability only

Answer: B

Explanation: EIGRP uses a composite metric based on bandwidth and delay.

6. Which command displays the current routing table on a Cisco router?

- A. `show interfaces`
- B. `show ip route`
- C. `show running-config`
- D. `show routes`

Answer: B

Explanation: Displays all learned, static, and connected routes.

7. What is the administrative distance of RIP?

- A. 90
- B. 100
- C. 110
- D. 120

Answer: D

Explanation: RIP has the lowest preference (AD = 120) among common IGPs.

8. Which of the following is an exterior gateway protocol?

- A. RIP
- B. EIGRP
- C. OSPF
- D. BGP

Answer: D

Explanation: BGP (Border Gateway Protocol) operates between autonomous systems.

9. Which routing protocol uses DUAL (Diffusing Update Algorithm)?

- A. OSPF
- B. EIGRP
- C. RIP
- D. IS-IS

Answer: B

Explanation: EIGRP uses DUAL to calculate loop-free paths quickly.

10. What is the administrative distance of EIGRP internal routes?

- A. 90
- B. 100
- C. 110
- D. 170

Answer: A

Explanation: EIGRP internal = 90; EIGRP external = 170.

11. In RIP, how often are routing updates sent by default?

- A. Every 10 seconds
- B. Every 15 seconds
- C. Every 30 seconds
- D. Every 60 seconds

Answer: C

Explanation: RIP sends full updates every 30 seconds.

12. What command enables RIP on Cisco routers?

- A. `router rip`
- B. `enable rip`
- C. `ip routing rip`
- D. `configure rip`

Answer: A

Explanation: The `router rip` command starts RIP process configuration mode.

13. Which version of RIP supports VLSM and CIDR?

- A. RIP v1
- B. RIP v2
- C. Both
- D. None

Answer: B

Explanation: RIP v2 supports classless routing (CIDR, VLSM) and uses multicast (224.0.0.9).

14. Which of the following is the multicast address for RIP v2 updates?

- A. 224.0.0.5
- B. 224.0.0.6
- C. 224.0.0.9
- D. 224.0.0.10

Answer: C

Explanation: RIP v2 updates are sent to 224.0.0.9.

15. What is the maximum hop count for RIP routes before they are considered unreachable?

- A. 10
- B. 15
- C. 16
- D. 30

Answer: C

Explanation: A hop count of 16 indicates an unreachable network.

16. Which command prevents RIP updates from being sent on an interface?

- A. `no ip rip advertise`
- B. `passive-interface`
- C. `no network`
- D. `ip rip off`

Answer: B

Explanation: `passive-interface` stops updates but allows receiving them.

17. What is the default OSPF administrative distance?

- A. 90
- B. 100
- C. 110
- D. 120

Answer: C

Explanation: OSPF routes have AD = 110.

18. Which protocol type is OSPF?

- A. Distance-vector
- B. Link-state
- C. Path-vector
- D. Hybrid

Answer: B

Explanation: OSPF is a link-state protocol using the Dijkstra algorithm.

19. What algorithm does OSPF use for route calculation?

- A. DUAL
- B. Bellman-Ford
- C. SPF (Shortest Path First)
- D. Path Vector

Answer: C

Explanation: OSPF uses the Dijkstra SPF algorithm.

20. Which command shows OSPF neighbor relationships?

- A. `show ip ospf`
- B. `show ip ospf neighbors`
- C. `show ospf topology`
- D. `show ospf neighbor`

Answer: B

Explanation: Displays neighbor ID, state, and interface details.

21. What is the OSPF Hello interval on a broadcast network?

- A. 5 seconds
- B. 10 seconds
- C. 30 seconds
- D. 60 seconds

Answer: B

Explanation: Default Hello = 10s, Dead interval = 40s on broadcast networks.

22. What is the OSPF router ID if not manually set?

- A. Lowest MAC address
- B. Highest loopback IP
- C. Lowest interface IP
- D. Randomly generated

Answer: B

Explanation: OSPF picks the highest IP of a loopback interface, else highest active IP.

23. Which type of OSPF router connects multiple areas?

- A. ABR (Area Border Router)
- B. ASBR (Autonomous System Boundary Router)
- C. DR (Designated Router)
- D. BDR (Backup Designated Router)

Answer: A

Explanation: ABR connects different OSPF areas.

24. What is the default OSPF area ID for single-area setups?

- A. 0
- B. 1
- C. 10
- D. 100

Answer: A

Explanation: Backbone area is always Area 0.

25. Which network type elects DR and BDR in OSPF?

- A. Point-to-point
- B. Broadcast
- C. NBMA
- D. Both B and C

Answer: D

Explanation: Broadcast and NBMA elect DR/BDR; point-to-point does not.

26. Which OSPF packet type contains LSAs?

- A. Hello
- B. Database Description
- C. Link-State Update
- D. Acknowledgment

Answer: C

Explanation: LSUs carry Link-State Advertisements.

27. What is the metric used by OSPF to select routes?

- A. Hop count
- B. Bandwidth
- C. Cost
- D. Delay

Answer: C

Explanation: $\text{Cost} = \text{Reference Bandwidth} / \text{Interface Bandwidth}$.

28. Which OSPF LSA type is generated by a router for directly connected links?

- A. Type 1
- B. Type 2
- C. Type 3
- D. Type 5

Answer: A

Explanation: Router LSAs (Type 1) describe directly connected networks.

29. Which command verifies OSPF routing information?

- A. `show ip route ospf`
- B. `show ospf database`
- C. `show ospf summary`
- D. `show ip ospf routes`

Answer: A

Explanation: Displays OSPF-learned routes in the routing table.

30. Which dynamic routing protocol is Cisco proprietary?

- A. OSPF
- B. RIP
- C. EIGRP
- D. IS-IS

Answer: C

Explanation: EIGRP was Cisco-proprietary but later partially opened.

31. Which transport protocol does EIGRP use?

- A. TCP
- B. UDP
- C. IP protocol 88
- D. ICMP

Answer: C

Explanation: EIGRP uses IP protocol number 88, not TCP or UDP.

32. What command enables EIGRP for autonomous system 100?

- A. `router eigrp 100`
- B. `enable eigrp 100`
- C. `ip routing eigrp 100`
- D. `router rip 100`

Answer: A

Explanation: The correct command enters EIGRP config mode for AS 100.

33. Which EIGRP table holds all successor and feasible successor routes?

- A. Neighbor table
- B. Topology table
- C. Routing table
- D. Metric table

Answer: B

Explanation: EIGRP's topology table stores all learned routes before choosing best ones.

34. What is a feasible successor in EIGRP?

- A. Backup route that satisfies feasibility condition
- B. Route with lowest hop count
- C. Main successor route
- D. Static route

Answer: A

Explanation: It's a backup route with a lower reported distance than the current feasible distance.

35. What EIGRP metric represents the best path to a destination?

- A. Feasible distance
- B. Reported distance
- C. Advertised distance
- D. Path metric

Answer: A

Explanation: Feasible distance (FD) = best total metric from local router to destination.

36. Which command displays EIGRP neighbors?

- A. `show ip eigrp neighbors`
- B. `show ip eigrp topology`
- C. `show eigrp neighbor`
- D. `show ip route eigrp`

Answer: A

Explanation: Displays neighbor address, hold time, and interface info.

37. Which command displays all EIGRP-learned routes?

- A. `show ip eigrp topology`
- B. `show ip eigrp routes`
- C. `show ip route eigrp`
- D. `show ip eigrp summary`

Answer: C

Explanation: Lists EIGRP-learned routes from the routing table.

38. What is the EIGRP default hello timer on high-speed interfaces?

- A. 5 seconds
- B. 10 seconds
- C. 30 seconds
- D. 60 seconds

Answer: A

Explanation: Default Hello = 5s, Hold time = 15s on high-speed links.

39. Which command disables automatic route summarization in EIGRP?

- A. `no auto-summary`
- B. `ip route no-summary`
- C. `disable summary`
- D. `eigrp disable summary`

Answer: A

Explanation: Prevents automatic summarization at classful boundaries.

40. Which protocol does BGP use for neighbor communication?

- A. UDP
- B. TCP
- C. IP
- D. ICMP

Answer: B

Explanation: BGP uses TCP port 179 for reliable updates.

41. What is the main purpose of BGP?

- A. Connects routers within the same AS
- B. Connects different autonomous systems on the Internet
- C. Replaces OSPF internally
- D. Used for VLAN communication

Answer: B

Explanation: BGP is the Internet's EGP, exchanging routes between ASes.

42. Which command enables BGP on AS 65001?

- A. `router bgp 65001`
- B. `enable bgp 65001`
- C. `ip bgp 65001`
- D. `router egp 65001`

Answer: A

Explanation: Standard command to start BGP routing process.

43. Which BGP message establishes a session between peers?

- A. Update
- B. Notification
- C. Keepalive
- D. Open

Answer: D

Explanation: The OPEN message initiates BGP neighbor relationship.

44. What is the default BGP administrative distance for external routes?

- A. 20
- B. 90
- C. 110
- D. 170

Answer: A

Explanation: EBGp = 20, IBGP = 200.

45. Which command verifies BGP neighbors?

- A. `show ip bgp neighbors`
- B. `show bgp routes`
- C. `show ip route bgp`
- D. `show bgp summary`

Answer: A

Explanation: Displays neighbor IPs, state, and uptime.

46. Which command shows BGP-learned routes?

- A. `show ip bgp`
- B. `show ip route bgp`
- C. `show bgp database`
- D. `show bgp paths`

Answer: A

Explanation: Lists all BGP-learned routes and path attributes.

47. What BGP attribute defines the exit point from an AS?

- A. MED
- B. AS_PATH
- C. NEXT_HOP
- D. Local Preference

Answer: C

Explanation: NEXT_HOP identifies the IP of the next router to reach the destination.

48. What is the primary purpose of Administrative Distance (AD)?

- A. To define routing metrics
- B. To prefer one routing source over another
- C. To measure bandwidth
- D. To reduce routing loops

Answer: B

Explanation: AD chooses between routes learned via different protocols.

49. Arrange the following AD values from most to least preferred:

- Static route
- OSPF
- EIGRP
- RIP

Answer: Static (1) → EIGRP (90) → OSPF (110) → RIP (120)

Explanation: Lower AD = higher preference.

50. Which routing method has the lowest administrative distance?

- A. Static
- B. Connected
- C. EIGRP
- D. BGP

Answer: B

Explanation: Directly connected routes = AD 0, most trusted of all.

● 1. BASIC NETWORKING (1–15)

1. Which layer of the OSI model is responsible for logical addressing?

- A. Layer 1
- B. Layer 2
- C. Layer 3
- D. Layer 4

✓ **Answer: C**

Explanation: Layer 3 (Network) handles logical (IP) addressing and routing.

2. Which device operates at Layer 2?

- A. Router
- B. Switch
- C. Firewall
- D. Repeater

✓ **Answer: B**

Explanation: Switches operate at Layer 2 (MAC addressing).

3. What is the default subnet mask of a Class C network?

- A. 255.0.0.0
- B. 255.255.0.0
- C. 255.255.255.0
- D. 255.255.255.255

✓ **Answer: C**

Explanation: Class C uses a /24 mask.

4. A broadcast message is sent to which address?

- A. 255.255.255.0
- B. 255.255.255.255

- C. 127.0.0.1
- D. 0.0.0.0

✓ **Answer: B**

Explanation: 255.255.255.255 is the limited broadcast address.

5. What protocol resolves IP to MAC?

- A. DNS
- B. ARP
- C. DHCP
- D. ICMP

✓ **Answer: B**

Explanation: ARP resolves IPv4 to MAC.

6. Which command checks connectivity?

- A. show ip route
- B. ping
- C. traceroute
- D. arp

✓ **Answer: B**

Explanation: `ping` uses ICMP echo requests.

7. What is the maximum length of a CAT6 cable?

- A. 50m
- B. 100m
- C. 120m
- D. 300m

✓ **Answer: B**

Explanation: Ethernet UTP standards limit cables to 100 meters.

8. Which protocol assigns IPs automatically?

- A. FTP
- B. DHCP
- C. ICMP
- D. ARP

✓ Answer: B

9. Which IP class supports 16 million hosts?

- A. A
- B. B
- C. C
- D. D

✓ Answer: A

Explanation: Class A allows approximately 16 million hosts.

10. Which tool traces each hop to a destination?

- A. ping
- B. traceroute
- C. nslookup
- D. telnet

✓ Answer: B

11. Which address type is globally unique?

- A. MAC address
- B. Private IP
- C. Loopback
- D. APIPA

✓ Answer: A

12. APIPA range is?

- A. 192.168.x.x
- B. 169.254.x.x
- C. 172.16.x.x
- D. 10.x.x.x

✓ Answer: B

13. Which device separates broadcast domains?

- A. Switch
- B. Hub
- C. Router
- D. Bridge

✓ Answer: C

14. Which command shows ARP table?

- A. show mac
- B. show arp
- C. show ip route
- D. show interface

✓ Answer: B

15. What is MTU size of Ethernet?

- A. 1024
- B. 1500
- C. 2000
- D. 9000

✓ Answer: B

● 2. BASIC NETWORK DEVICES (16–25)

16. A device that floods all frames is a:

- A. Switch
- B. Router
- C. Hub
- D. Bridge

✓ Answer: C

17. A switch builds a MAC table using:

- A. Source MAC
- B. Destination MAC
- C. IP address
- D. Port number

✓ Answer: A

18. Which device breaks collision domains?

- A. Switch
- B. Hub
- C. Repeater
- D. Modem

✓ Answer: A

19. A router works using:

- A. MAC
- B. IP
- C. Port
- D. Frequency

✓ Answer: B

20. Which device performs NAT?

- A. Switch
- B. Router
- C. Hub
- D. Firewall

✓ Answer: B

21. A firewall primarily works at which layer?

- A. 2
- B. 3
- C. 4
- D. 3 & 4

✓ Answer: D

22. A WLC (Wireless LAN Controller) manages:

- A. AP
- B. Switches
- C. Routers
- D. Hubs

✓ Answer: A

23. Which device has no intelligence?

- A. Hub
- B. Switch
- C. Router
- D. Firewall

✓ Answer: A

24. Which device performs packet forwarding based on IP?

- A. Switch
- B. Router
- C. Hub
- D. Server

✓ Answer: B

25. A Layer 3 switch can perform:

- A. NAT
- B. Routing
- C. DHCP
- D. DNS

✓ Answer: B

● 3. SWITCHING & ROUTING (26–40)

26. Which table does a switch maintain?

- A. Routing table
- B. MAC table
- C. ARP table
- D. Translation table

✓ Answer: B

27. Routing loop prevention is done using:

- A. STP
- B. TTL
- C. DHCP
- D. ARP

✓ Answer: B

28. Which protocol is used for inter-network communication?

- A. Ethernet
- B. IP
- C. ARP
- D. DHCP

✓ Answer: B

29. A switch learns MAC only on:

- A. Broadcast
- B. Unicast
- C. Multicast
- D. Source MAC of frames

✓ Answer: D

30. Administrative distance of OSPF is:

- A. 120
- B. 90
- C. 110
- D. 1

✓ Answer: C

31. EIGRP uses which algorithm?

- A. SPF
- B. DUAL
- C. Distance Vector
- D. Bellman-Ford

✓ Answer: B

32. Static routes have AD of:

- A. 1
- B. 0
- C. 90
- D. 110

✓ Answer: A

33. What is the AD of connected networks?

- A. 0
- B. 1
- C. 10
- D. 100

✓ Answer: A

34. Which is a hybrid routing protocol?

- A. RIP
- B. OSPF
- C. EIGRP
- D. BGP

✓ Answer: C

35. OSPF uses which metric?

- A. hops
- B. bandwidth
- C. delay
- D. cost

✓ Answer: D

36. RIP uses which metric?

- A. bandwidth
- B. delay
- C. hop count
- D. MTU

✓ Answer: C

37. Max hop count for RIP is:

- A. 10
- B. 15
- C. 30
- D. 31

✓ Answer: B

38. Default OSPF Hello timer (broadcast)

- A. 10s
- B. 30s
- C. 20s
- D. 40s

✓ Answer: A

39. EIGRP uses multicast address:

- A. 224.0.0.5
- B. 224.0.0.6
- C. 224.0.0.10
- D. 224.0.0.9

✓ Answer: C

40. OSPF multicast addresses:

- A. 224.0.0.5 & 224.0.0.6
- B. 224.0.0.1 & 224.0.0.2
- C. 224.0.0.9 & 224.0.0.10
- D. 224.0.0.11

✓ Answer: A

● 4. STATIC, EIGRP, OSPF ROUTING (41–60)

41. Command to configure static route?

- A. ip route
- B. ip add
- C. route add
- D. set ip

✓ Answer: A

42. EIGRP metric depends on?

- A. hop count
- B. bandwidth + delay
- C. cost
- D. jitter

✓ Answer: B

43. OSPF area 0 is known as:

- A. Backbone
- B. Transit

- C. Stub
- D. NSSA

✓ Answer: A

44. OSPF router-id format is:

- A. MAC address
- B. IP address format
- C. binary
- D. hex

✓ Answer: B

45. Redistributing EIGRP into OSPF requires:

- A. metric
- B. bandwidth
- C. MTU
- D. wildcard

✓ Answer: A

46. EIGRP default AD (internal routes)

- A. 120
- B. 90
- C. 110
- D. 170

✓ Answer: B

47. OSPF area must be:

- A. connected to area 1
- B. connected to area 0
- C. unique
- D. divided

✓ Answer: B

48. OSPF virtual link connects:

- A. two stub areas
- B. an area to backbone
- C. two routers without adjacency
- D. two subnets

✓ Answer: B

49. Loopback interfaces in OSPF become:

- A. DR
- B. ABR
- C. /32 by default
- D. /24 by default

✓ Answer: C

50. EIGRP uses which message type?

- A. Hello
- B. Query
- C. Update
- D. All of the above

✓ Answer: D

51. OSPF neighbors form adjacency based on:

- A. same network
- B. same timers
- C. same area
- D. all above

✓ Answer: D

52. OSPF uses which transport protocol?

- A. TCP
- B. UDP
- C. None
- D. ICMP

✓ Answer: C

53. EIGRP uses which transport?

- A. TCP
- B. UDP
- C. RTP
- D. ICMP

✓ Answer: C

54. OSPF default priority for DR?

- A. 0
- B. 1
- C. 10
- D. 128

✓ Answer: D

55. Loopback is used for:

- A. testing
- B. router-id
- C. stable IP
- D. all above

✓ Answer: D

56. OSPF backbone must be:

- A. area 1
- B. area 0
- C. area 10
- D. stub

✓ Answer: B

57. EIGRP K-values must be:

- A. different
- B. same
- C. random
- D. disabled

✓ Answer: B

58. EIGRP external AD is:

- A. 90
- B. 110
- C. 170
- D. 15

✓ Answer: C

59. OSPF metric =

- A. hop count
- B. $\text{cost} = 100 / \text{bandwidth}$
- C. bandwidth only
- D. delay only

✓ Answer: B

60. RIP sends update every:

- A. 10 sec
- B. 15 sec
- C. 30 sec
- D. 60 sec

✓ Answer: C

● 5. VLAN (61–75)

61. VLAN increases:

- A. collision domains
- B. broadcast domains
- C. network segmentation
- D. broadcast storms

✓ Answer: C

62. Trunking protocol used in Cisco:

- A. STP
- B. VTP
- C. 802.1Q
- D. LACP

✓ Answer: C

63. Access port carries:

- A. multiple VLANs
- B. one VLAN only
- C. no VLAN
- D. native VLAN only

✓ Answer: B

64. Native VLAN default is:

- A. 10
- B. 1
- C. 100
- D. 99

✓ Answer: B

65. VLAN tagging is removed on:

- A. trunk
- B. switch
- C. access port
- D. router

✓ Answer: C

66. VLAN hopping attack prevented by:

- A. BPDU guard
- B. disabling DTP
- C. enabling STP
- D. loop guard

✓ Answer: B

67. Inter-VLAN routing is done by:

- A. switch
- B. router
- C. multilayer switch
- D. B & C

✓ Answer: D

68. Router-on-a-stick uses:

- A. physical interfaces
- B. sub-interfaces
- C. virtual links
- D. vlan trunks

✓ Answer: B

69. Which command sets trunk?

- A. switchport mode access
- B. switchport mode trunk
- C. trunk enable
- D. vlan mode trunk

✓ Answer: B

70. VTP runs on:

- A. access ports
- B. trunks
- C. loopback
- D. LACP

✓ Answer: B

71. VLAN range (normal)

- A. 1–200
- B. 1–4094
- C. 2–1001
- D. 1006–4094

✓ Answer: C

72. DTP stands for:

- A. Dynamic Trunking Protocol
- B. Data Transfer Protocol
- C. Dynamic Transport Protocol
- D. Default Trunk Protocol

✓ Answer: A

73. Name of untagged VLAN on trunk:

- A. access
- B. native
- C. default
- D. main

✓ Answer: B

74. Prevent trunk auto-negotiation:

- A. shutdown
- B. trunk disable
- C. switchport nonegotiate
- D. STP disable

✓ Answer: C

75. VLANs create separate:

- A. collision domains
- B. broadcast domains
- C. layer 1
- D. OSI layers

✓ Answer: B

● 6. SPANNING TREE (76–85)

76. Purpose of STP:

- A. load balancing
- B. loop prevention
- C. routing
- D. VLAN creation

✓ Answer: B

77. STP root bridge is elected based on:

- A. highest MAC
- B. lowest MAC
- C. highest priority
- D. lowest priority

✓ Answer: D

78. STP uses which address?

- A. broadcast
- B. multicast
- C. unicast
- D. anycast

✓ Answer: B

79. Default STP priority is:

- A. 0
- B. 4096
- C. 32768
- D. 65535

✓ Answer: C

80. PortFast used on:

- A. trunk
- B. access
- C. switch
- D. router

✓ Answer: B

81. BPDU Guard shuts port when:

- A. receives BPDU
- B. trunk negotiation
- C. STP disabled
- D. loop found

✓ Answer: A

82. RSTP is defined in:

- A. 802.1D
- B. 802.1Q
- C. 802.1W
- D. 802.1X

✓ Answer: C

83. STP port that forwards frames:

- A. root port
- B. designated port
- C. blocking
- D. disabled

✓ Answer: B

84. STP timers:

- A. hello: 2s
- B. max age: 20s
- C. forwarding: 15s
- D. all above

✓ Answer: D

85. Loop guard prevents:

- A. VLAN hopping
- B. alternate → forwarding
- C. BPDU attack
- D. routing loops

✓ Answer: B

● 7. ETHERCHANNEL (86–93)

86. EtherChannel bundles:

- A. multiple IPs
- B. multiple VLANs
- C. multiple links
- D. multiple routes

✓ Answer: C

87. LACP mode “active” matches:

- A. passive
- B. auto
- C. desirable
- D. on

✓ Answer: A

88. PAgP mode “desirable” matches:

- A. desirable
- B. auto
- C. on
- D. active

✓ Answer: A

89. EtherChannel interface is:

- A. VLAN
- B. Port-channel
- C. Sub-interface
- D. loopback

✓ Answer: B

90. LACP standard is:

- A. Cisco
- B. IEEE
- C. Juniper
- D. Microsoft

✓ Answer: B (IEEE 802.3ad)

91. EtherChannel load balancing uses:

- A. MAC
- B. IP
- C. port
- D. any of them

✓ Answer: D

92. Mis-match in EtherChannel causes:

- A. trunk disable
- B. suspended state
- C. STP blocking
- D. VLAN mismatch

✓ Answer: B

93. Max number of active LACP links?

- A. 2
- B. 4
- C. 8
- D. 16

✓ Answer: C (8 active, 8 standby)

● 8. RIP (94–97)

94. RIPv6 is for:

- A. IPv4
- B. IPv6
- C. multicast
- D. OSPF

✓ Answer: B

95. RIP uses port:

- A. 23
- B. 161

- C. 520
- D. 69

✓ Answer: C

96. RIP split horizon prevents:

- A. routing loops
- B. route updates
- C. bandwidth
- D. NAT

✓ Answer: A

97. RIP default version on Cisco is:

- A. v1
- B. v2
- C. both
- D. none

✓ Answer: C

● 9. LOOPBACK (98–100)

98. Loopback interfaces are always:

- A. down
- B. up
- C. shutdown
- D. blocking

✓ Answer: B

99. Loopback is used for:

- A. DR/BDR election
- B. router stability
- C. testing
- D. all above

✓ Answer: D

100. OSPF sees loopback as:

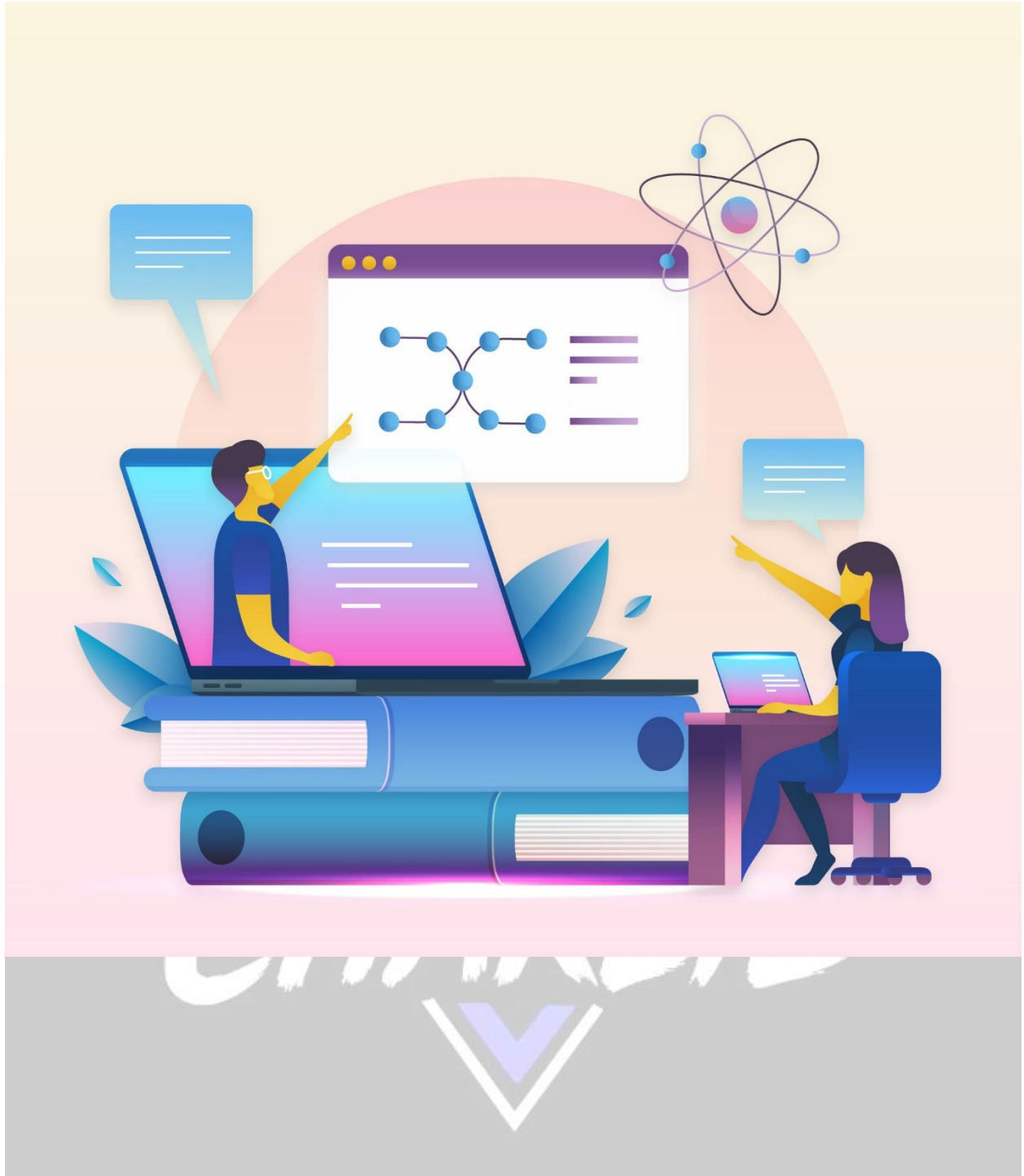
- A. point-to-point
- B. broadcast
- C. /32 host
- D. stub

✓ Answer: C



CHARLIE

Cisco Commands



1. BASIC CISCO COMMANDS

RAJA MUHAMMAD
MUSTANSAR JAVAID

421


```
enable
configure terminal
hostname Router1
banner motd #Unauthorized access prohibited#
service password-encryption
no ip domain-lookup
clock set HH:MM:SS MONTH DAY YEAR
copy running-config startup-config
show running-config
show startup-config
reload
```

✓ 2. ENABLE MODE “SHOW” COMMANDS

```
show ip interface brief
show interfaces
show vlan brief
show cdp neighbors
show version
show arp
show mac address-table
show ip route
show protocols
show port-security
show spanning-tree
show etherchannel summary
show standby (HSRP)
```

✓ 3. ROUTING COMMANDS

◆ A. STATIC ROUTING

```
ip route <destination-network> <mask> <next-hop-ip>
ip route 0.0.0.0 0.0.0.0 <next-hop-ip> (default route)
```

◆ B. RIP ROUTING

```
router rip
version 2
network <network-id>
no auto-summary
passive-interface <interface>
```

◆ C. EIGRP ROUTING

```
router eigrp 100
network <network> <wildcard-mask>
no auto-summary
passive-interface <interface>
```

EIGRP authentication

```
key chain EIGRP_KEYS
  key 1
    key-string cisco123

interface g0/0
  ip authentication mode eigrp 100 md5
  ip authentication key-chain eigrp 100 EIGRP_KEYS
```

◆ D. OSPF ROUTING

```
router ospf 10
router-id 1.1.1.1
network <network> <wildcard> area <area-id>
passive-interface <interface>
```

OSPF Passive interface default

```
router ospf 10
  passive-interface default
  no passive-interface g0/0
```

◆ OSPF Virtual Link

```
router ospf 10
  area 1 virtual-link <router-id-of-other-side>
```

◆ OSPF Authentication

```
interface g0/0
  ip ospf message-digest-key 1 md5 cisco123

router ospf 10
  area 0 authentication message-digest
```

◆ Redistribution (Mutual Redistribution Example)

EIGRP → OSPF

```
router ospf 10
  redistribute eigrp 100 subnets
```

OSPF → EIGRP

```
router eigrp 100
  redistribute ospf 10 metric 10000 100 255 1 1500
```

✓ 4. STP (SPANNING TREE PROTOCOL)

Enable STP mode

```
spanning-tree mode pvst
spanning-tree mode rapid-pvst
```

Set root bridge

```
spanning-tree vlan 1 root primary
spanning-tree vlan 1 root secondary
```

PortFast

```
interface g0/1
 spanning-tree portfast
 spanning-tree bpduguard enable
```

STP cost, priority

```
interface g0/1
 spanning-tree cost 4
 spanning-tree port-priority 16
```

✓ 5. ETHERCHANNEL COMMANDS

◆ A. LACP (Active/Passive)

```
interface range g0/1 - 2
 channel-group 1 mode active
```

◆ B. PAgP (Desirable/Auto)

```
interface range g0/1 - 2
 channel-group 1 mode desirable
```

◆ C. EtherChannel verification

```
show etherchannel summary
show interface port-channel 1
```

✓ 6. INTER-SWITCH VLAN (TRUNKING)

Create VLAN

```
vlan 10
  name SALES
vlan 20
  name HR
```

Access Port

```
interface g0/1
  switchport mode access
  switchport access vlan 10
```

Trunk Port

```
interface g0/24
  switchport trunk encapsulation dot1q
  switchport mode trunk
  switchport trunk allowed vlan 10,20
```

✓ 7. INTER-VLAN ROUTING (ROUTER-ON-A-STICK)

On Router

```
interface g0/0.10
  encapsulation dot1Q 10
  ip address 192.168.10.1 255.255.255.0

interface g0/0.20
  encapsulation dot1Q 20
  ip address 192.168.20.1 255.255.255.0
```

On Switch Trunk

```
interface g0/1
 switchport mode trunk
```

✓ 8. RIP ROUTING COMMANDS

(Already above but full set here)

```
router rip
version 2
network <network>
no auto-summary
passive-interface <interface>
default-information originate
```

✓ 9. LOOPBACK INTERFACE

```
interface loopback0
 ip address 1.1.1.1 255.255.255.255
```

✓ 10. SECURITY COMMANDS

◆ A. Password Protection

```
enable secret cisco123
username admin privilege 15 secret strongpass
```

◆ VTY Lines

```
line vty 0 4
```

```
password cisco
login local
transport input ssh
```

◆ SSH Configuration

```
ip domain-name lab.local
crypto key generate rsa modulus 2048
ip ssh version 2
line vty 0 4
  login local
```

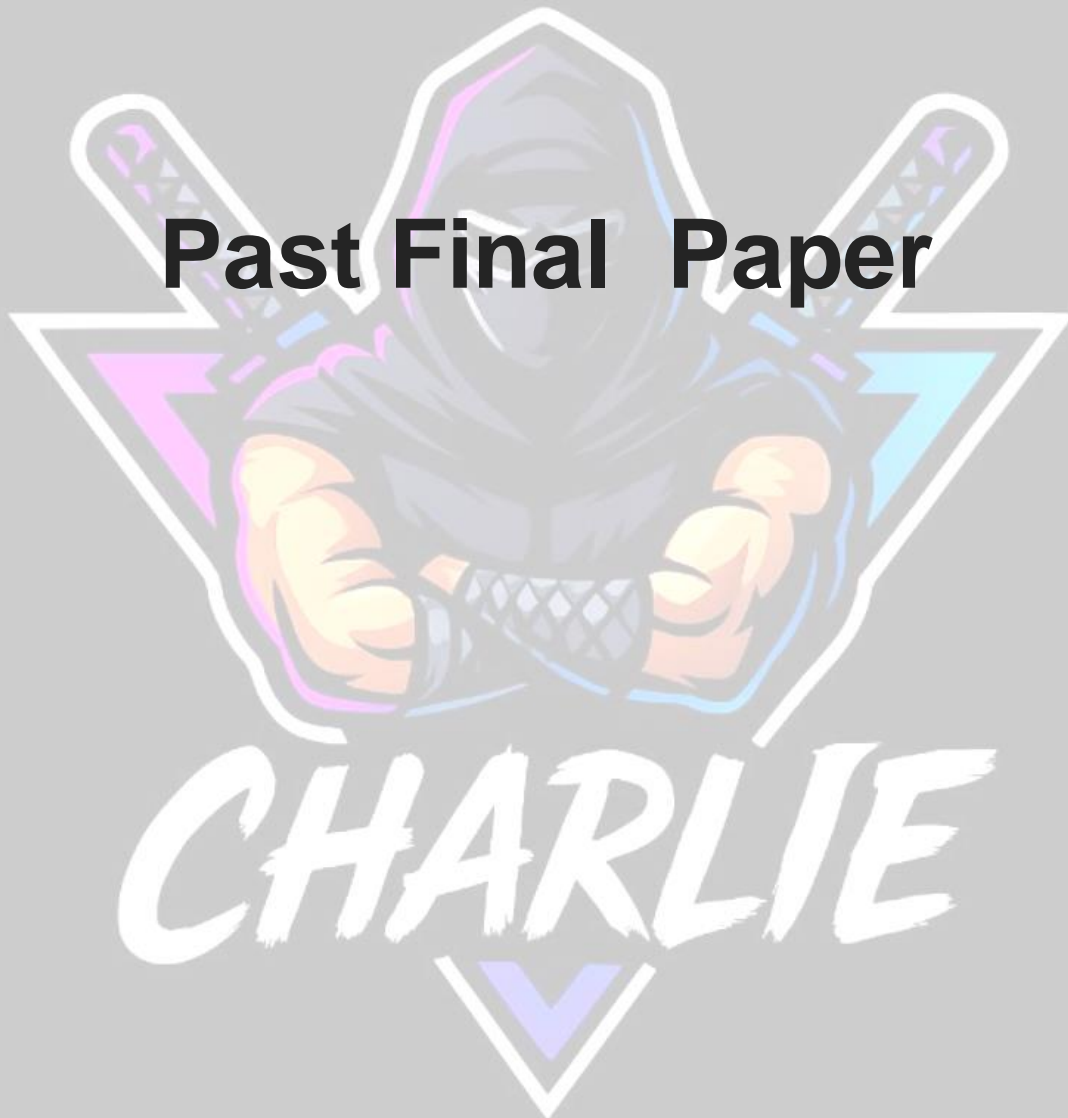
◆ Port Security

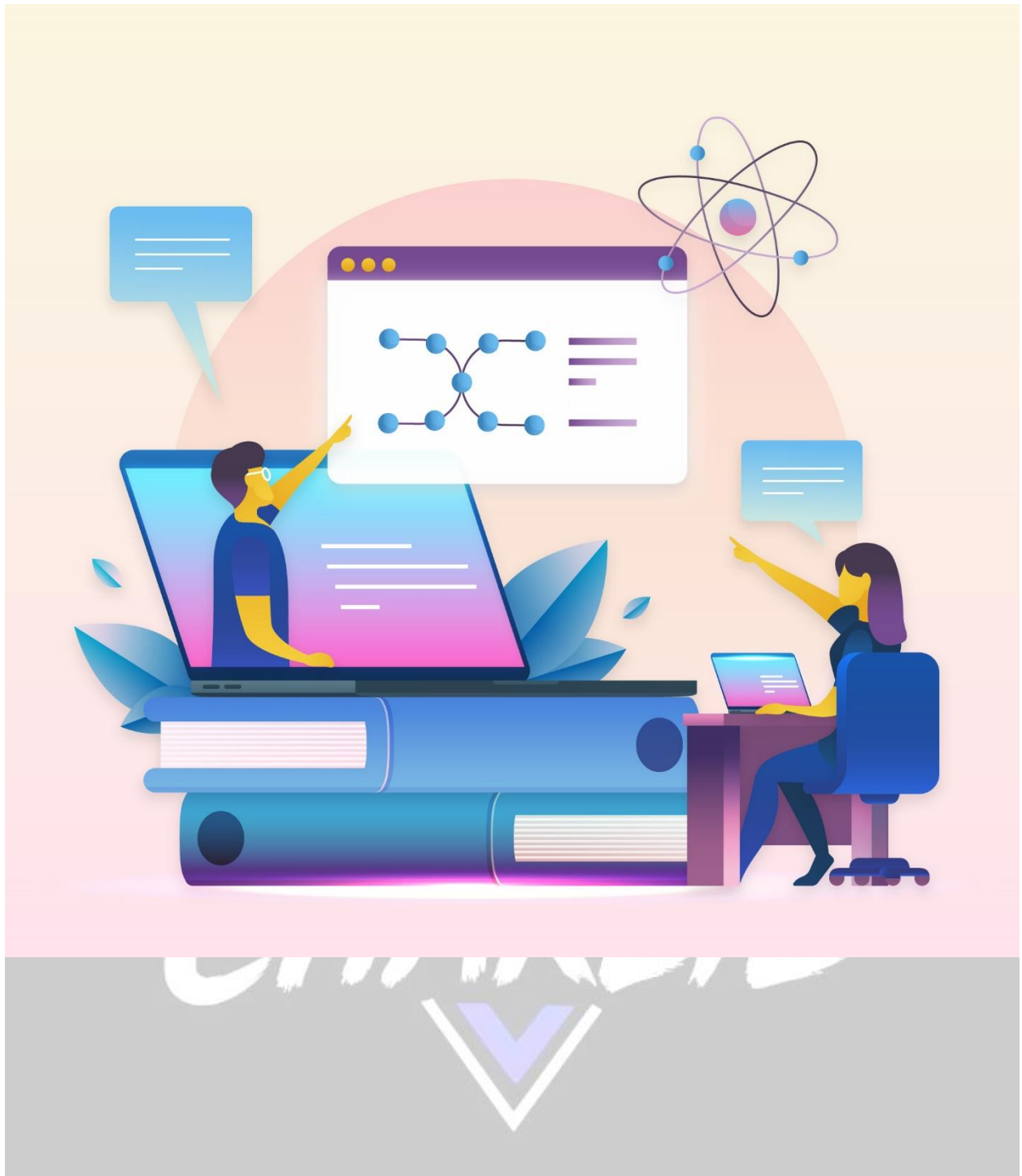
```
interface g0/1
  switchport mode access
  switchport port-security
  switchport port-security maximum 2
  switchport port-security violation restrict
  switchport port-security mac-address sticky
```

✓ 11. BASIC NETWORK & TROUBLESHOOTING COMMANDS

```
ping <ip>
traceroute <ip>
show ip interface
debug ip packet
clear ip arp
show logging
show ip protocols
show controllers
no shutdown
```

Past Final Paper







National Vocational and Technical Training Commission (NAVTTTC)

Course Name: Web Designing and Development

Institute Name: Research and Solution Multan Campus

Examination Type: Final Term Assessments

Name: _____ **Time Duration:** 30 Minutes

Objective: 10 **Practical** 90 **Total Marks:** 100

Instruction Carefully.

1. Attempt all Question Every Question Containing Different Marks. No Negative marking
 2. Cancellation of Paper/confiscation of cell phone/Legal Action.
 3. Physical Checking can be done at any time During Test.
-

Objective

Tick or circle one option.

Q1: What does the acronym WWW stand for?

- A. Wild Wacky Walter
- B. Web Wide Wave
- C. World Wide Web
- D. Wide Wall Web
- E. Web World Wall

Q2: Which of the following tasks or elements would be considered back-end?

- A. . Graphic interface
- B. Database programming
- C. PHP Scripts
- D. HTML programming
- E. Interface design

Q3: What are shared on the Internet and are called as Web pages?

- A. Programs
- B. Cables
- C. Hypertext documents
- D. None

Q4: ____ is a collection of controls in HTML.

- A. Form
- B. Field
- C. Table
- D. Frame

Q5: HTML allows us to create three different kinds of ____

- A. Functions
- B. Events
- C. Files
- D. Lists

Q6: HTML allows us to use ____ levels of headings.

- A. Two
- B. Three
- C. Five
- D. Six

Q7: The instructions indicated to the browser to display a document are called _

- A. Codes
- B. Tags
- C. Programs
- D. Statements

Q8: SQL stands for

- A. Structured Query Language
- B. Statistical Query Language
- C. Superior Questions Lot
- D. Standard Query Lot

Q9: Which of the following is true about JavaScript

- A. It is a server-side scripting language
- B. It is client-side scripting language
- C. It is a Software
- D. It is a database

Q 10: Which of the following software could be used to build a website

- A. Power Point
- B. Excel
- C. Dream Weaver
- D. ERP

Best of Luck



National Vocational and Technical Training Commission (NAVTEC)

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Examination Type: final Term Assessments

Name: _____

Time Duration: 3:30 Hours

Practical 90

Total Marks: 100

Instruction Carefully.

1. Attempt all Question Every Question Different Marks. No Negative marking
 2. Cancellation of Paper/confiscation of cell phone/Legal Action.
 3. Physical Checking can be done at any time During Test.
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Practical

Question 1: Create Connection signup form to Data Base?

Question 2: Create Colour Full Signup form which following Attributes

- | | |
|---------------------|---------------------------|
| 1. Enter first name | 2. Enter Last name |
| 3. Enter password | 4. Re type password |
| 5. Select Gender | 6. Select country |
| 7. create checkbox | 8. upload profile picture |
| 9. add comment Box, | 10. Submit Button |

Question 3: Create Project Airline Reservation System?

1. Header (Logo, search, social links)
2. Footer (copyright statements, Careers, contact us)
3. Navigation bar (Home, about, check schedule, signup, sign in, check availability seats)
4. Slider (add latest add)

Question 4: Implements Following Tags

- | | |
|--|--------------------------------------|
| 1) images | 2) Video |
| 3) Audio | 4) calendar |
| 5) Quotation, superscript, subscript | 6) Link Tags |
| 7) event perform in JavaScript to show date and time | 8) create Table Result Card |
| 9) Abbreviation tags | 10) insert values in data base Query |