

My grades for Midterm

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#13 Page 2 of 12

Multiple Choice (45 points total)

(1 point per question) Choose the correct answer (every question has one correct answer) for each question. There is a bubble sheet attached to the end of this exam, flip to it and fill in the bubble for the letter corresponding to the right answer. If you make a mistake, erase, or cross out the bubble for the incorrect choice and fill in the bubble for the correct answer.

1. A company plans to migrate its on-premises workload to AWS. The current architecture is composed of a Microsoft SharePoint server that uses a Windows shared file storage. The Solutions Architect needs to use a cloud storage solution that is highly available and can be integrated with Active Directory for access control and authentication. Which of the following options can satisfy the given requirements? A. Launch an Amazon EBS volume and mount it to a new S3 bucket as a file volume. B. Create a file system using Amazon EFS and join it to an Active Directory domain. C. Create a file system using Amazon FSx for Windows File Server and join it to an Active Directory domain in AWS. D. Create a Network File System (NFS) file share using AWS Storage Gateway.

2. An application in AWS is currently running in the Singapore region. You have been asked to implement disaster recovery for the application in S. If the application goes down in the Singapore region, it needs to start in the Tokyo region. Your application relies on pre-built AMIs. As part of your disaster recovery strategy, which of the below points would you consider? A. Nothing, because all AMIs by default are available in any region as long as they are created within the same account. B. Copy the AMI from the Singapore region to the Tokyo region. Modify the Auto Scaling groups in the backup region to use the new AMI ID in the backup region. C. Modify the image permissions and share the AMI to the Tokyo region. D. Modify the image permissions to share the AMI with another account, then set the default region to the backup region.

3. A Fortune 500 company, which frequently processes and stores global financial data every minute, is hosting its on-premises data center and uses an Oracle database. Due to a recent cooling problem in their data center, the company urgently needs to migrate their infrastructure to AWS to improve the performance of their applications. As the Solutions Architect, you are responsible in ensuring that the database is properly migrated and should remain available in case of emergency failover. Which of the following is the most suitable solution to meet the requirement? A. Launch an Oracle database instance in RDS with Recovery Manager (RMAN) enabled. B. Launch an Oracle Real Application Clusters (RAC) in RDS.

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#13 Page 3 of 12



Convert the database schema using the AWS Schema Conversion Tool and AWS Database Migration Service. Migrate the Oracle database to a non-cluster Amazon Aurora with a single instance.

D. Create an Oracle database in RDS with Multi-AZ deployments.

4. A Big Data processing company has created a distributed data processing framework that performs best if the network performance between the processing machines is high. The application has to be deployed on AWS, and the company is only looking at performance as the key metric. As a Solutions Architect, which deployment do you recommend?

A. Optimize the EC2 kernel using EC2 User Data

B. Use Spot Instances

C. Use a Dedicated placement group

D. Use a Spread placement group

5. Azure's "Hot", "Cool", and "Archive" storage tiers are associated with which service?

A. Azure Blob Storage

B. Azure File Storage

C. Azure Queue Storage

D. Azure Table Storage

6. A company wants to store business-critical data on EBS volumes which provide persistent storage independent of EC2 instances. During a test run, the development team found that on terminating an EC2 instance, the attached EBS volume was also lost, which was contrary to their assumptions.

As a solutions architect, could you explain this issue?

A. On termination of an EC2 instance, all the attached EBS volumes are always terminated

B. The EBS volumes were not backed up on Amazon S3 storage, resulting in the loss of volume

C. The EBS volume was configured as the root volume of Amazon EC2 instance. On termination of the instance, the default behavior is to also terminate the attached root volume

D. The EBS volumes were not backed up on EFS file system storage, resulting in the loss of volume

7. What does Azure Table Storage provide?

A. A service for storing large amounts of unstructured object data

B. A service for storing structured NoSQL data

C. A service for storing relational data

D. A service for storing semi-structured data

8. A logistics company plans to use AWS Lambda in their order management application. The company wants to use SFTP transfers in uploading business-critical documents. Since the files are confidential, the files need to be highly available and must be encrypted at rest. The files must also be automatically deleted a month after they are created.

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#13 Page 4 of 12

Which of the following options should be implemented to meet the company requirements with the lowest overhead?

- A. Create an Amazon S3 bucket with encryption enabled. Configure AWS Transfer for SFTP to securely upload files to the S3 bucket. Configure the retention policy on the SFTP server to delete files after a month.
- B. Purchase an Amazon EC2 instance and install the SFTP service. Mount an encrypted EFS file system on the EC2 instance to store the uploaded files. Add a cron job to delete files older than a month.
- C. Create an Amazon S3 bucket with encryption enabled. Launch an AWS Transfer for SFTP endpoint to securely upload files to the S3 bucket. Configure an S3 lifecycle rule to delete files after 30 days.
- D. Create an Amazon Elastic Filesystem (EFS) file system and enable encryption. Configure AWS Transfer for SFTP to securely upload files to the EFS file system. Apply an EFS lifecycle policy to delete files after 30 days.

9. Which of the following is a security control that can be applied at the subnet layer of a VPC?

- Network ACL
- Security Group
- Firewall
- Web application firewall

10. You are creating several EC2 instances for a new application. For better performance of the application, both low network latency and high network throughput are required for the EC2 instances. All instances should be launched in a single availability zone. How would you configure this?

- Launch all EC2 instances in a placement group using a Cluster placement strategy.
- Auto-assign a public IP when launching the EC2 instances.
- Launch EC2 instances in an EC2 placement group and select the Spread placement strategy.
- When launching the EC2 instances, select an instance type that supports enhanced networking.

11. You are building a static web app and need to host it on Azure. Which services would you use?

- Azure Static Web Apps
- Azure Blob Storage
- Azure App Service
- A or B

12. There are a lot of outages in the Availability Zone of your RDS database instance to the point that you have lost access to the database. What could you do to prevent losing access to your database in case that this event happens again?

- Make a snapshot of the database
- Create a read replica

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#13 Page 5 of 12



Enabled Multi-AZ failover
 Increase the database instance size

13. A healthcare startup needs to enforce compliance and regulatory guidelines for objects stored in Amazon S3. One of the key requirements is to provide adequate protection against accidental deletion of objects.
As a solutions architect, what are your recommendations to address these guidelines?
A. Enable versioning on the bucket.
B. Change the configuration in the AWS S3 console so that the user needs to provide additional confirmation while deleting any S3 object
 Enable MFA delete on the bucket
 A & C

14. Your development team wants to start making use of EC2 Instances to host their Application and Web servers. In terms of automation, they want the instances to always download the latest version of the Web and Application code when they are launched.
As an architect, what would you recommend for this scenario?
 Ask the Development team to create scripts which can be added to the User Data section when the instance is launched.
B. Ask the Development team to create scripts which can be added to the Meta Data section when the instance is launched.
C. Use Auto Scaling Groups to install the Web and Application servers when the instances are launched.
D. Use EC2 Config to install the Web and Application servers when the instances are launched.

15. Your application requires compute resources for a short duration, multiple times throughout the day. Which Azure service should you use to minimize cost?
 Azure Functions
 Azure Virtual Machines
 Azure Kubernetes Service
 Azure Batch

16. A company is hosting EC2 instances which focus on work-loads for non-production and non-priority business loads. Also, these processes can be interrupted at any time. What is the best pricing model that can be used for EC2 instances in this case.
A. Reserved instances
B. On-Demand instances
 Spot instances
D. Regular instances

17. What feature is supported when attaching or detaching an EBS volume from an EC2 instance?
 EBS volume can be attached and detached to an EC2 instance in the same region
 EBS volume can be attached and detached to an EC2 instance that is cross-region

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#13 Page 6 of 12

EBS volume can only be copied and attached to an EC2 instance that is cross-region

EBS volume can only be attached and detached to an EC2 instance in the same Availability Zone

18. In Azure, what is a "Network Security Group"?

- A. A group of virtual networks
- B. A firewall service
- C. A set of networking rules
- D. A network monitoring service

19. An AI-powered Forex trading application consumes thousands of data sets to train its machine learning models. The application's operational requires a high-performance, parallelized storage to process those datasets concurrently. It also needs cost-effective cold storage to archive those datasets that yield low profits.

Which of the following Amazon storage services should the developer use?

- A. Use Amazon FSx For Lustre and Amazon S3 for hot and cold storage respectively.
- B. Use Amazon FSx For Lustre and Amazon S3 for hot and cold storage respectively.
- C. Use Amazon FSx For Lustre and Amazon EBS Provisioned IOPS SSD (io1) volumes for hot and cold storage respectively.
- D. Use Amazon FSx For Windows File Server and Amazon S3 for hot and cold storage respectively

20. Your team is developing a globally distributed application. You need a database service that guarantees single-digit millisecond latencies at the 99th percentile.

Which Azure service should you use?

- A. Azure SQL Database
- B. Azure Cosmos DB
- C. Azure Table Storage
- D. Azure Database for MySQL

21. What is the primary function of Azure App Service?

- A. To host web apps, mobile app backends, RESTful APIs, or automated business processes
- B. To provide serverless compute
- C. To provide a NoSQL database
- D. To host static websites

22. An online medical system hosted in AWS stores sensitive Personally Identifiable Information (PII) of the users in an Amazon S3 bucket. Both the master keys and the unencrypted data should never be sent to AWS to comply with the strict compliance and regulatory requirements.

Which S3 encryption technique should the Architect use?

- A. Use S3 server-side encryption with a KMS managed key.
- B. Use S3 client-side encryption with a client-side master key.
- C. Use S3 client-side encryption with a KMS-managed customer master key.

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#13 Page 7 of 12



D. Use S3 server-side encryption with customer provided key.

23. You need to build a data storage layer in AWS. Following are the key requirements:

- a) Stores JSON documents
- b) Availability of Indexes
- c) Automatic scaling

Which of the following would be an ideal storage layer for the above requirements?

- A. AWS DynamoDB
- B. AWS Lambda Volumes
- C. AWS S3
- D. AWS Glacier

24. An application with a 150 GB relational database runs on an EC2 Instance. This is a critical business application requiring more than 16,000 IOPS of throughput per volume. Which storage type would be preferred?

- A. Amazon Provisioned IOPS SSD
- B. Amazon EBS Throughput Optimized HDD
- C. Amazon EBS General Purpose SSD
- D. Amazon EFS

25. You have a legacy application that you need to run in the cloud without modifications. Which Azure service would be the most cost-effective solution?

- A. Azure Functions
- B. Azure Cosmos Database
- C. Azure Kubernetes Service
- D. Azure App Service

26. You have been given a business requirement to retain log files for your application for 10 years. You need to regularly retrieve the most recent logs for troubleshooting. Your logging system must be cost-effective given the large volume of logs. What technique should you use to meet the requirements?

- A. Store your log in Amazon CloudWatch Logs.
- B. Store your logs in Amazon Glacier.
- C. Store your logs in Amazon S3, and use Lifecycle Policies to archive to Amazon Glacier.
- D. Store your logs in Amazon EBS, and use Amazon EBS Snapshots to archive them.

27. A company's legacy application is currently relying on a single-instance Amazon RDS MySQL database. The company must migrate to new compliance requirements, all existing and new data in this database must be encrypted. How should this be accomplished?

- A. Create an Amazon S3 bucket with server-side encryption enabled. Move all the data to Amazon S3. Delete the RDS instance.
- B. Enable RDS Multi-AZ mode with encryption at rest enabled. Perform a failover to the new instance.
- C. Take a snapshot of the RDS instance. Create an encrypted copy of the snapshot. Restore the RDS instance from the encrypted snapshot.

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D. Create an RDS read replica with encryption at rest enabled. Promote the read replica to master and switch the over to the new master. Delete the old RDS instance.

3. You are building a web application that needs to handle a large volume of user-generated content, like photos and videos, and serve this content to users globally with low latency. What Azure services should you use to store and deliver this content?

- A. Azure SQL Database for storage, and Azure Virtual Machines for delivery.
- B. Azure Blob Storage for storage, and Azure Content Delivery Network (CDN) for delivery.
- C. Azure Table Storage for storage, and Azure App Service for delivery.
- D. Azure Queue Storage for storage, and Azure Functions for delivery.

4. An application that records weather data every minute is deployed in a fleet of Spot EC2 instances and uses a MySQL RDS database instance. Currently, there is only one RDS instance running in one Availability Zone. You plan to improve the database to ensure high availability by synchronous data replication to another RDS instance. Which of the following performs synchronous data replication in RDS?

- A. RDS Read Replica
- B. CloudFront running as a Multi-AZ deployment
- C. DynamoDB Read Replica
- D. RDS DB instance running as a Multi-AZ deployment

5. A Solutions Architect wants to design a solution to save costs for EC2 instances that do not need to run during a 2-week company shutdown. The applications running on the instances store data in instance memory (RAM) that must be present when the instances resume operations. Which approach should the Solutions Architect recommend to shut down and resume the instances?

- A. Modify the application to store the data on instance store volumes. Reattach the volumes without restarting them.
- B. Snapshot the instances before stopping them. Restore the snapshot after restarting the instances.
- C. Run the applications on instances enabled for hibernation_.Hibernate the instances before the shutdown.
- D. Note the Availability Zone for each instance before stopping it. Restart the instances in the same Availability Zones after the shutdown.

3. A customer planning on hosting an AWS RDS instance, needs to ensure that the underlying data is encrypted. How can this be achieved?

- A. Encrypt the database during creation.
- B. Choose only General Purpose SSD. Because only this volume type supports encryption at rest.
- C. You can encryption the database instance anytime.
- D. Enable encryption of the underlying EBS Volume.

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#13 Page 9 of 12



32. Which use case indicates that a non-relational database is a better solution than a relational database?
 A. Vertical scaling for massive data volume *horizontal scaling*
 B. Data with unpredictable attributes
 C. Strong read-after-write consistency
 D. High availability and fault tolerance

33. A company collects atmospheric data such as temperature, air pressure, and humidity from different countries. Each site location is equipped with various weather instruments and a high-speed Internet connection. The average collected data in each location is around 500 GB and will be analyzed by a weather forecasting application hosted in Northern Virginia. As the Sudden increase in data volume is expected, the company wants to store it in the fastest way. Which of the following options can satisfy the given requirement?
 A. Use AWS Snowball Edge to transfer large amounts of data.
 B. Set up a Site-to-Site VPN connection.
 C. Upload the data to the current S3 bucket. Set up a cross-region replication and copy the objects to the destination bucket.
 D. Enable Transfer Acceleration in the destination bucket and upload the collected data using Multipart Upload.

34. You are a solutions architect working for a large travel company that is migrating its existing server estate to AWS. You have recommended that they use a custom Amazon VPC, and they have agreed with you. They have created a public subnet with two web servers and a private subnet in which to run their databases. They also require that the web servers and database servers be highly available and that there be a minimum of two web servers and two database servers each. How many subnets should you have to maintain high availability?
 A. 2.
 B. 3.
 C. 4.
 D. 1.

35. Your company currently has data hosted in an Amazon Aurora MySQL DB. Since this data is critical, there is a need to ensure that it can be made available in another region in case of a disaster. How can this be achieved?
 A. Make a copy of the EBS Volumes in the Amazon Cluster in another region.
 B. Create a read replica for the Aurora database.
 C. Creating a read replica of Amazon Aurora in another region.
 D. Create an EBS Snapshot of the underlying EBS Volumes in the Amazon Cluster and then copy them to another region.

36. Which action is best practice for designing a virtual private cloud (VPC)?
 A. Divide the VPC network range evenly across all Availability Zones available.

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#13 Page 10 of 12

37. Match the size of the VPC Classless Inter-Domain Routing (CIDR) block to the number of hosts required for a workload.

- A. Use the same Classless Inter-Domain Routing (CIDR) block as your on-premises network.
- B. Create two subnets per Availability Zone for each group of hosts that have unique routing requirements.

38. You're architecting a solution for a global company that needs to store structured data from various sources, with the ability to perform complex queries across all data. The solution must also support automatic scaling and global distribution. Which Azure service should you use?

- A. Azure SQL Database
- B. Azure Table Storage
- C. Azure Cosmos DB
- D. Azure MySQL Database

39. A company wants to have a fully managed data store in AWS. It should be a competitive MySQL database, which is an application requirement. Which of the following database engines can be used for this purpose?

- A. AWS RDS
- B. AWS Aurora
- C. Amazon RelationalDB
- D. AWS Redshift

40. You are developing a new mobile application which is expected to be used by thousands of customers. You are considering storing user preferences in AWS, and need a data store to save the same. Each data item is expected to be 20KB in size. The solution needs to be cost-effective, highly available, scalable and secure. How would you design the data layer?

- A. Create an AWS Lambda function and store the user data there.
- B. Create a DynamoDB table and use it as the data layer.
- C. Use Amazon Glacier to store the user data.
- D. Use an Amazon Redshift Cluster for managing the user preferences.

41. Which definition describes a virtual private cloud (VPC)?

- A. A virtual private network (VPN) in the AWS Cloud

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#13 Page 11 of 12



38. An extension of an on-premise network into AWS.
C. A logically isolated virtual network that you define in the AWS Cloud ✓
X. A fully managed service that extends the AWS cloud to customer premises

39. A company is required to use the AWS RDS service to host a MySQL database. This database is going to be used for production purposes and is expected to experience a high number of read/write activities. Which of the below underlying EBS Volume types would be ideal?
A. General Purpose SSD
B. Provisioned IOPS SSD ✓
C. Throughput Optimized HDD
D. Cold HDD

40. A content management system (CMS) is hosted on a fleet of auto-scaled, On-Demand EC2 instances that use Amazon Aurora as its database. Currently, the system stores the file documents that are uploaded in one of the attached EBS Volumes. Your manager noticed that the system performance is quite slow and he has instructed you to improve the architecture of the system.
In this scenario, what will you do to implement a scalable, high-available POSIX-compliant shared file system?
A. Use an in-Cache
B. Create an S3 bucket and use this as the storage for the CMS ✓
C. Use EFS
D. Upgrading your existing EBS volumes to Provisioned IOPS SSD Volumes

41. Your team is developing a high-performance computing (HPC) application. The application requires fast, consistent, low-latency problems and needs a high-performance and low-latency shared file system. You need to configure this file system with the least effort. Which method is the most suitable?
A. Create a Lustre file system through Amazon FSx.
B. Launch a high-performance Lustre file system in Amazon EBS.
C. Create a high-speed volume cluster in an RC2 placement group.
D. Launch the Lustre file system from AWS Marketplace.

42. Your company's network has a range of 172.16.0.0/21 (2048 addresses). It has two subnets (A and B). Each subnet must support 100 hosts. The company is growing, but this growth is expected to rise to at most 254 usable addresses soon. Which subnet addressing scheme meets the requirements and follows AWS best practices?
A. Subnet A: 172.16.0.0/25 (128 addresses) Subnet B: 172.16.0.128/25 (128 addresses)
B. Subnet A: 172.16.0.0/23 (512 addresses) Subnet B: 172.16.2.0/23 (512 addresses)
C. Subnet A: 172.16.0.0/23 (512 addresses) Subnet B: 172.16.2.0/22 (1024 addresses)
D. Subnet A: 172.16.0.0/22 (1024 addresses) Subnet B: 172.16.4.0/22 (1024 addresses)

P. 172.16.0.0/21
Subnet A: 172.16.0.0/25 (128 addresses) Subnet B: 172.16.0.128/25 (128 addresses)
Subnet A: 172.16.0.0/23 (512 addresses) Subnet B: 172.16.2.0/23 (512 addresses)
Subnet A: 172.16.0.0/23 (512 addresses) Subnet B: 172.16.2.0/22 (1024 addresses)
Subnet A: 172.16.0.0/22 (1024 addresses) Subnet B: 172.16.4.0/22 (1024 addresses)

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#13 Page 12 of 12

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