Question 1: Your developers have created a VPC with both public and private subnets. The VPC has CIDR notation of 10.0.0.0/16. The private subnet uses CIDR 10.0.1.0/24 and the public subnet uses 10.0.0/24. Web servers will be hosted in the public subnet using port 80 and 443. The database server and NAT server will be hosted on the private subnet. A security group has been configured for the NAT instance. Which of the entries below are not required when creating the NAT security group? Choose two answers

[1] For Inbound access allow Source: 10.0.1.0/24 on port 80
[2[For Outbound access allow Destination 0.0.0.0/0 on port 80
[3] For Inbound allow Source on 10.0.0.0/24 on port 80
[4] For Outbound allow Destination 0.0.0.0/0 on port 443
[5] For Inbound access allow Source: 10.0.0.0/24 on port 80

Comments: The NAT server is located in the public subnet

AWS DOCUMENTATION:
http://docs.aws.amazon.com/AmazonVPC/latest/UserGuide/VPC_NAT_Instance.html

Question 2: You're company uses a RDS DB solution deployed across multi availability zones. You're maintenance window on Sunday at 2 AM for the scaling of instance storage. What system tasks performed by AWS may be carried out during the maintenance window timeframe? Choose one answer.

[1] Enabling additional read replicas
[2] Adding availability zones
[3] Database backups
[4] Security patching

Comments: Patching RDS is part of the shared security model at AWS

AWS DOCUMENTATION:
http://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/USER_UpgradeDBInstance.Maintenance.html

Question 3: A sales manager has created an S3 bucket for PMs to upload projects. Project files change frequently so the ability of multiple copies of files when changes occur is essential. Each project is also considered highly secure, so each project file must be encrypted with a different encryption key for each project. How can this level of security be achieved? Choose one answer.

[1] Each PM should compress each project before uploading each file
[2] Server side encryption should be enabled on the S3 bucket
[3] Versioning should be enabled on the bucket; then client-side or server-side encryption can be deployed
[4] It is not possible to combine versioning with separate encryption keys
[5] Versioning should be enabled on each project file; then client-side or server-side encryption can be utilized

Comments: Versioning provides redundancy

AWS DOCUMENTATION:
http://docs.aws.amazon.com/AmazonS3/latest/dev/UsingEncryption.html

Question 4: You are responsible for a web application where the Web server instances are hosted in auto scaling group. Monitoring the load of the application over the last 12 months reveals that 8 servers are required to handle the minimum load. During a 24-hour period, on average 13 servers are needed. Three weeks out of the year the number of servers might increase to 16. What recommendations would you make to minimize operating costs while providing required availability? Choose two answers.

[1] 8 reserved instances with heavy utilization, 5 reserved instances with medium utilization, the rest covered by on-demand instances
[2] 8 reserved instances with heavy utilization, 5 on-demand instances, the rest covered by on-demand instances
[3] 8 reserved instances with heavy utilization, 5 spot instances, the rest covered by on-demand instances
[4] 8 reserved instances with heavy utilization, 5 reserved instances with medium utilization, the rest covered by spot instances

Comments: Optimizing instance costs involves consideration of all pricing options

AWS DOCUMENTATION: http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/instance-purchasing-options.html

Question 5: Detailed monitoring needs to be carried out on servers that are marked unhealthy before they are terminated in an effort to gather additional details. After researching the issue, you find that lifecycle hooks can be deployed for custom solutions. Which of the following are examples could be used? Choose two answers.

1. Using a cloud watch event to invoke a Lambda function
2. Add additional details to user data to place the instance into a pending: wait state
3. Query 160.254.169.254 when instances are first marked unhealthy
4. Define a notification target for the lifecycle hook
5. Create a longer cooldown period in the launch configuration

Comments: lifecycle hooks allow customization of existing autoscaling groups

AWS DOCUMENTATION: http://docs.aws.amazon.com/autoscaling/latest/userguide/lifecycle-hooks.html

Question 6: You've decided to use SNS in conjunction with Auto Scaling to alert you when your auto scaling group scales. Notifications can be delivered using SNS in several ways. Select the supported notification methods. Choose all that apply.

1. HTTP or HTTPS POST notifications
2. Text messages using the SMS service
3. Email using SMTP or plain-text
4. Messages posted to an SQS queue
5. Invoke a Lambda function

Comments: Lambda works with cloud watch events

AWS DOCUMENTATION:
http://docs.aws.amazon.com/autoscaling/latest/userguide/ASGettingNotifications.html

Question 7: When designing CloudWatch monitoring to integrate with Auto Scaling, which three key Instance metrics could be selected? Choose all that apply.

1. CPU Utilization (%)
2. Memory Utilization
3. Memory Available
4. Network Utilization
5. Swap Utilization (%)
6. Network Out Utilization (%)

Comments: CPU, Memory and Network utilization are the best metrics to consider

AWS DOCUMENTATION:
http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/viewing_metrics_with_cloudwatch.html

Question 8: Monitoring your application servers that are hosted behind an elastic load balancer you discover that the servers are always operating between 70 and 85% of their capacity after five minutes of operation. As well, there are a constant number of servers being marked as unhealthy very early in their initial lifecycle. Upon further analysis, you also discover that your servers are taking between three and four minutes to become operational after launch. What two tasks should you carry out as soon as possible? Choose two answers.

1. Enable detailed CloudWatch monitoring
2. Increase the length of your grace period
3. Decrease the length your grace period
4. Reduce the size of instances in your auto scaling group
5. Increase the size of instances in your auto scaling group
6. Increase the size of instances in your launch config

Comments: A longer grace period and larger instances will solve the issues

AWS DOCUMENTATION:
http://docs.aws.amazon.com/autoscaling/latest/userguide/AutoScalingGroup.html

Question 9: Auto Scaling groups and launch configurations have been created for application servers based on the recommended specifications from the developers. The applications will be launched into separate Regions. In US East there are no issues when initializing the application cluster. US West deployments span error messages indicating the user request of an Auto Scaling group is failed. What are two ways that you can attempt to solve this problem? Choose two answers.

1. Ask the design team for different specifications for application servers
2. Create a new launch configuration following the recommendations listed in the error message
3. Choose a different region to launch the application servers
4. Update your auto scaling group with a new launch configuration and new instance type

Comments: Different regions at different times will have different resources available

AWS DOCUMENTATION:
http://docs.aws.amazon.com/autoscaling/latest/userguide/CHAP_Troubleshooting.html

Question 10 Servers are contained in an AWS Auto Scaling group protected behind a load balancer. The ELB has health checks enabled. When servers are started and join the Auto Scaling group they are almost immediately flagged as unhealthy and discarded. Where should you look for a design issue? Choose one answer.

1. Review the ELB health checks
2. Review the EC2 health check grace period
3. Review the size of your instances
4. Review the size of your load balanced
5. Review enabled CloudWatch metrics

Comments: The EC2 health check is used to determine whether an instance is healthy

AWS DOCUMENTATION: http://docs.aws.amazon.com/elasticloadbalancing/2012-06-01/APIReference/API_HealthCheck.html

Question 11: You are utilizing the AWS CLI to link a CloudWatch event to an auto scaling policy. The command you are using is put-metric-alarm. You wish to monitor average CPU utilization for a period of 60 seconds with an evaluation period of 3 intervals, for an event of 80% or greater level. What is the proper syntax for your command? Choose one answer.

1. put-metric-alarm --alarm-name web-scale-up --metric-name NetworkUtilization --period 60 --threshold 80 ---evaluation-periods 3 --unit Percent
2. put-metric-alarm --alarm-name web-scale-up --metric-name CPUUtilization --period 60 --threshold 80 ---evaluation-periods 3 --unit Percent
3. put-metric-alarm --alarm-name web-scale-up --metric-name CPUUtilization --period 80 --threshold 60 ---evaluation-periods 3 --unit Percent
4. put-metric-alarm --alarm-name web-scale-up --metric-name CPULoad --period 60 --threshold 80 ---evaluation-periods 3 --unit Average

Comments: put commands can be used for finite automated control of CloudWatch events

AWS DOCUMENTATION:
http://docs.aws.amazon.com/autoscaling/latest/userguide/WhatIsAutoScaling.html#access-as

Question 12: Your developers have successfully deployed a three-tier application at AWS. One of the components includes a monitoring instance that monitors key components that notifies CloudWatch when failures occur. The system works flawlessly however you need to also monitor the monitoring instance and be notified when it becomes unhealthy. How can you quickly achieve monitoring of the monitoring instance? Choose one answer.

1. Run an additional monitoring instance that pings the monitoring instance and alerts the operations team when failures occur
2. Define a cloud watch alarm based on EC2 instance status checks; if status checks fail alert the operations team via email
3. Have the monitoring instance send messages to an SQS queue, and also queue these messages on another backup monitoring instance; when the queue stops receiving new messages failover to the backup monitor
4. Create an auto scaling group of a minimum and maximum of one instance; setup cloud watch alerts to scale the outer scaling group.

Comments: cloud watch alarms are the easiest set up for this example

AWS DOCUMENTATION:
http://docs.aws.amazon.com/AmazonCloudWatch/latest/monitoring/UsingAlarmActions.html

Question 13: After deployment of application and database servers at AWS for the first month performance was adequate. Now due to increased customer demand, you want to change the instance type for instances that are running your application tier. In which area of auto scaling would you change the existing instance type definition? Choose one answer.

1. auto scaling launch configuration
2. auto scaling policy
3. auto scaling group
4. autoscaling tags
5. cloud formation template

Comments: the auto scaling group is where instance changes would be made

AWS DOCUMENTATION:
http://docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/aws-properties-as-launchconfig.html

Question 14: Developers have created a sales application that works in tandem with the no SQL database. To ensure the fastest response for the application in production, the developers wish to remove the need to wait for acknowledgements from the database to the application after data has been sent. Which AWS managed service would be the best choice for their design? Choose one answer.

1. Simple notification service
2. Simple workflow service
3. Simple queue service
4. CloudWatch
5. AWS config

Comments: SQS is a fast and reliable scalable managed message queuing service

AWS DOCUMENTATION: https://aws.amazon.com/sqs/details/

Question 15: Monitoring your online sales application for the last two weeks of holiday sales, it is apparent the database tier current architectural design is not sufficient. The decision is made to scale your instance to a greater size based on database recommendations from the vendor. Your current database storage type is magnetic and, currently storage usage is at 70%. What modifications should you consider for improving performance of your database? Choose all that could apply.

1. Increase the number of reads replicas
2. Increase the currently allocated storage space
3. Decrease the currently allocated storage space
4. Change storage type to general-purpose SSD
5. Change storage type to provisioned IOPS SSD

Comments: When scaling a database, the database instance size can be increased as well as the performance

AWS DOCUMENTATION: https://forums.aws.amazon.com/thread.jspa?messageID=203052

Question 16: What downtime and failover cycle will occur when an RDS solution deployed in a Multi-AZ environment is scaled up in Instance size? Choose two answers

1. The primary database will first be upgraded
2. The standby database will first be upgraded
3. Failover to the secondary database occurs
4. Failover to the primary database occurs
5. The standby database is promoted to the secondary

Comments: The standard database will get upgraded and then failover will occur to the newly sized database

AWS DOCUMENTATION: https://aws.amazon.com/rds/details/#DB_Instance_Classes

Question 17: You've designed a public portal hosting popular scientific journals. Due to its popularity, users are complaining it takes much longer to review selected journals that in the past. In addition, the popularity of your site is worldwide. What two steps should you should first take to solve your performance issues? Choose two answers.

1. Create a read replica synchronized with your master database
2. Redesign your database as a Multi- AZ solution
3. Place additional read replicas in AWS regions closer to your users
4. Deploy ElasticSearch for faster searching of available scientific journals
5. Deploy ElasticCache to improve the performance of your web servers

Comments: Read replicas synchronized with the master database allow you to increase performance. Placing you read replicas in different AWS regions closer to you users will maximize performance and increase the availability of your database

AWS DOCUMENTATION:
http://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/Concepts.MultiAZ.html

Question 18: Your Amazon RDS relational database has been under heavy load, due to increased online sales activity. The overall performance needs to be improved. You have decided to increase the size of your instance based on vendor recommendations. Analysis of both database reads and writes also shows that your application database has roughly the same number of reads and writes. What type of scaling solution or resizing should you consider for the database after resizing the instance. Choose two answers.

1. Horizontal scaling
2. Vertical scaling
3. Auto scaling
4. Resizing the instance to vendor recommendations
5. Storage resizing

Comments: Vertical scaling will help address applications that use the same number of reads and writes

AWS DOCUMENTATION: https://aws.amazon.com/blogs/database/category/rds-mysql/

Question 19: Over 60 % of the time your database is under increased load.. You've decided to vertically scale your database instance to be able to handle the higher loads more effectively. Your current license can handle the selected Instance size increase. How could your changes be applied? Choose two answers.

1. After choosing a larger instance size
2. During the maintenance window for the database instances
3. When changing the database storage type
4. Manually selecting a larger instance and rebooting
5. Using CloudFront metrics

Comments: Scaling changes can be applied immediately or during the maintenance window specified

AWS DOCUMENTATION: https://aws.amazon.com/blogs/database/scaling-your-amazon-rds-instance-vertically-and-horizontally/

Question 20: You are planning to deploy a hybrid environment linking an on premise database to an application server tier hosted at AWS. What are the concerns with this design when considering the communication between the hosted application servers at AWS and the on-site database? Choose two answers.

1. Security of data
2. Network bandwidth
3. Control of data resources
4. Network latency
5. Private network access

Comments: Since the database is not located in the same location as the application servers, network latency and bandwidth could potentially be an issue

AWS DOCUMENTATION: https://d0.awsstatic.com/whitepapers/the-path-to-the-cloud-dec2015.pdf

Question 21: Your on premise bare-metal servers are over five years old; and you're considering moving to AWS. The offerings of virtual instances far surpasses what you can access in your current on premise deployment. Before you choose your first test instance at AWS what questions should you be asking? Choose two answers.

1. What is the selected server utilization
2. How much time you spend on patching and maintaining your environment
3. When peak load occurs how much over provisioning is required
4. What is the cost of over provisioning
5. How much network bandwidth do you need

Comments: Proper server testing must be undertaken to know your server needs

AWS DOCUMENTATION: https://d0.awsstatic.com/whitepapers/the-path-to-the-cloud-dec2015.pdf

Question 22: Your company is considering migrating to AWS but they are concerned with initial and mid to short-term costs due to the complexity of the migration cycle. To effectively calculate the total cost of ownership certain costs must be understood and planned for. What costs should be considered carefully. Choose all that apply.

1. The cost of on demand versus reserved instances
2. The size of long-term archival storage
3. The cost of outside consulting services
4. The cost of running duplicate environments
5. The cost of using a Direct Link connection
6. The cost of running migration tools

Comments: Not getting a handle on knowing your costs before migration, and during the migration process is a recipe for disaster

AWS DOCUMENTATION: https://d0.awsstatic.com/whitepapers/the-path-to-the-cloud-dec2015.pdf

Question 23: Your company is migrating it's infrastructure to AWS. When considering the migration level effort required, a select number of VM's that fall under the "very low effort" category. After looking at third-party migration options you decide to utilize available AWS tools. What tools are available for migrating VMs to the AWS cloud? Choose two answers.

1. AWS Migration Services
2. AWS VM Import
3. AWS Snowmobile
4. AWS Snowball
5. AWS S3 Import

Comments: Both Snowball and VM import can be used to migrate VMs. Snowball mitigates any band with the issues that may occur when using VM import with standard Internet connections.

AWS DOCUMENTATION: https://www.slideshare.net/AmazonWebServices/aws-migration-planning-roadmap

Question 24: Migration costs are defined as a total cost of migration or TCM. Your company is committed to migrate all workloads to the AWS cloud. After analyzing the existing workloads that your company is running on premise, you need to define the amount of effort that will be required to migrate to AWS. After creating your sample cost model, what migration costs will you highlight when presenting the results to the CTO? Choose two answers.

1. Total cost of migration
2. Total migration effort
3. Total number of reserved instances required
4. Mean migration effort average

Comments: To ensure workloads are successfully migrated on schedule, the amount of effort and the average time for migration per workload ARE figures that are easy to understand

AWS DOCUMENTATION: https://aws.amazon.com/cloud-data-migration/

Question 25: Exchange server 2013 is the dominant application used within your company. Due to cost restraints, AWS has been chosen to host your exchange servers. You need to test out the environment quickly to understand the cloud in more detail. What could be your first step. Choose one answer.

1. Deploy reserved instances that matches your current exchange server environment
2. Deploy exchange server using a Quickstart reference deployment
3. Use cloud formation template design to automate your infrastructure
4. Use AWS import services to migrate your VM's to the AWS cloud
5. Use the AWS server migration service

Comments: Quickstart reference deployments allow you to deploy architecture that is been designed to operate as a "gold standard"

AWS DOCUMENTATION: https://aws.amazon.com/compliance/pci-data-privacy-protection-hipaa-soc-fedramp-faqs/

Question 26: Your company is migrating into AWS and has selected the region of US East to begin initial operations. The majority of your work involves interfacing with government departments in the United States and Germany. Your company expects the deployment into the cloud to be up and running in a minimum of time. Before deploying any resources in the European region what is your first step? Choose one answer.

1. The number of web servers to deploy
2. European privacy laws
3. The pre-warming storage and load balancer's
4. FEDRAMP rules and regulations

Comments: Privacy laws in foreign countries will dictate the compliance rules and regulations you must follow

AWS DOCUMENTATION: https://aws.amazon.com/compliance/pci-data-privacy-protection-hipaa-soc-fedramp-faqs/

Question 27: Your MySQL database currently contains 2 million records. Approximately 2000 new records are added every day with an average of 85 queries per second. It is running on a 4 core, 8 GB dedicated system in the local data center. On average once a week, the system has issues and resets. It is next on the list to be moved to the cloud. What should the first steps in migration be? Choose one answer.

1. Order an on-demand instance matching on premise architecture
2. Use the AWS server migration service to migrate existing records
3. Optimize all MYSQL performance issues locally
4. Export all database records to S3
5. Order a reserved instance matching on premise architecture

Comments: Issues that are not first solved locally will not be solved by moving to the cloud

AWS DOCUMENTATION:
http://docs.aws.amazon.com/dms/latest/userguide/CHAP_Troubleshooting.html

Question 28: The AWS data migration service has been used to begin your migration into AWS. You are pleased there are no errors however the migration tasks are running slowly. Reviewing the resources that have been assigned to the AWS DMS replication instance they seem to be adequate. What other task could you perform to help speed up the initial migration tasks? Choose one answer.

1. Turn off all logging on the target database
2. Enable multi-availability zones on the target database instance
3. Increase the IOPs on the replication instance
4. Reduce the frequency of automatic backups

Comments: Turning off automatic backups are logging results on the target database during the migration will help increase the speed of the initial migration load

AWS DOCUMENTATION:
http://docs.aws.amazon.com/dms/latest/userguide/CHAP_Troubleshooting.html

Answer Key:

1. 3, 5
2. 4
3. 3
4. 2
5. 1, 4
6. 1, 3, 5
7. 1, 2, 4
8. 2, 5
9. 2, 4
10. 2
11. 2
12. 2
13. 3
14. 3
15. 2, 4, 5
16. 2, 3
17. 1, 3
18. 1, 4
19. 1, 2
20. 2, 4
21. 1, 3
22. 3, 4, 6
23. 2, 4
24. 2, 4
25. 2
26. 2
27. 3
28. 1