Answer Sheet

Q1) What AWS service can be used to generate a database migration assessment report with recommendations regarding schema conversion, database object compatibility, and conversion effort estimates

- AWS Migration Hub
- ✅ AWS SCT

Explanation:-AWS Schema Conversion Tool (SCT) can be used to produce the database migration assessment report.

- AWS DMS
- AWS Server Migration Service

Q2)

A solutions architect is planning a database conversion and migration from on-premise database cluster to AWS. A database migration assessment report needs to be created to assess the migration compatibility, task, effort, and recommendations.

What steps are required to configure AWS SCT (Select TWO)?

- ✅ Install required database drivers

Explanation:-AWS SCT does not include database drivers with the installation. Database drivers required to connect to the source and target database need to be downloaded and installed as a separate manual step.

- Create S3 Bucket for assessment report storage
- Assign IAM role to AWS SCT Service
- Configure Direct Connect between on-premise data center and AWS VPC
- ✅ Install the AWS SCT Tool

Explanation:-AWS SCT needs to be installed on a virtual machine with access to on-premise network.

Q3)

An application uses RDF model to describe relationships between graph objects stored in Amazon Neptune.

What query language should be used in this scenario?

- Cypher
- ✅ SPARQL

Explanation:-SPARQL is the query language used with RDF models and supported by Amazon Neptune.

- Gremlin
- GraphQL

Q4)

CodeBuild is being used during deployment of an application. The application connects to an external database with database credentials being managed by Secrets Manager.

Where should the reference to the database credentials be specified?

- CodeBuild Environment Variable
- ✅ BuildSpec file

Explanation:-CodeBuild uses the BuildSpec file as a specification of build commands and settings. “secrets-manager” syntax can be used to retrieve database credentials stored in AWS Secrets Manager.

- AppSpec file
- CloudFormation Template

Q5)

A solutions architect is migrating an enterprise Oracle database to EBS backed EC2 instances requiring 10,000 IOPS?

Which EBS Volume type would be appropriate for this scenario?

- ✅ gp2

Explanation:-gp2 volume type provides max IOPS of 16,000.

- io1
- st1
- sc1

Q6)

A solution architect is migrating an enterprise Oracle database to EBS backed EC2 instances requiring 24,000 IOPS?

Which EBS Volume type would be appropriate for this scenario?

- st1
- ✅ io1

Explanation:-io1 volume type provides max IOPS of 64,000.

- gp2
- sc1

Q7)

A company is migrating their on-premise Teradata data warehouse system to AWS.

What AWS service offers columnar data store suitable for data warehousing?

✅ Amazon Redshift
Explanation:-Amazon Redshift is a peta-byte scale columnar datastore used for data reporting and data analytics use cases.
- Amazon Athena
- Amazon Aurora
- Amazon Lake Formation

Q8)

A developer is implementing an IoT application using DynamoDB as the data store for device event data. An application requirement is to automatically purge all event data older than 30 days.

What is the optimal option to implement this requirement?

- Create a new DynamoDB table every 30 days. Delete the old DynamoDB table.
- Enable DynamoDB streams on the table. Implement Lambda function to read events from the stream and delete expired items.
- Implement a Lambda function to perform a query and delete on the table for items with timestamp greater than 30 days. Use CloudWatch events to trigger Lambda function.
✅ Enable TTL on the DynamoDB table and store the expiration timestamp in the TTL attribute in the epoch time format.
Explanation:-Time to Live (TTL) for Amazon DynamoDB is functionality that enables automatic deletion of items after a specified expiration time defined by a timestamp in the TTL attribute.

Q9)

A retail organization is developing a data lake solution utilizing Amazon S3 to store a large amount of data. They would like to be able to perform data exploration and discovery activities by running SQL queries on the data. Based on the output of those activities, they would like to produce complex reports accessible to a large number of users via BI applications.

What AWS services should be part of their solution (SELECT TWO)?

- Amazon Lambda for the complex reporting
- AWS Glue for the data discovery activities
✅ Amazon Athena for the data discovery activities
Explanation:-Amazon Athena can be used to perform ad-hoc queries on data in S3 directly using SQL syntax.
✅ Amazon RedShift Spectrum for the complex reporting
Explanation:-Amazon Redshift Spectrum can be used to query data from files in Amazon S3 without having to load the data into Amazon Redshift tables. Redshift Spectrum compute-intensive queries employ massive parallelism to execute very fast against large datasets.
- Amazon QuickSight for the data discovery activities

Q10)

To increase performance of their database solution, an organization is looking to migrate from their RDS MySQL database instance to an Aurora MySQL Database cluster.

What is the optimal solution for performing data migration in this scenario?

- Copy the backup files from the source database to an Amazon S3 bucket. Restore the Aurora MySQL DB cluster from those files.
✅ Create an Aurora Read Replica of the source database. After the migration is complete, promote the Aurora Read Replica to a stand-alone DB cluster.
Explanation:-it is possible to create an Aurora Replica of an existing RDS MySQL database. This then automatically migrates the data from source to target. Once data migration is complete, it is possible to promote the read replica to a stand-alone cluster. This is the recommended approach to migrate data from RDS MySQL database to an Aurora MySQL Cluster.
- Use the AWS Database Migration Service (DMS) to migrate the data.
- Use the MySQL mysqldump utility to copy the data.

Q11)

An application team complains that DocumentDB cluster takes a long time to return query results.

What can a database specialist use to investigate the query execution plan and analyze the query performance?

- CloudWatch Logs
- CloudTrail Events
- AWS X-Ray
✅ MongoDB explain() method
Explanation:-db.runCommand can be used with explain() method to provide a detailed execution plan of a query and provide insight into the query performance.

Q12)

An application stores its data in a DynamoDB table. The application team finds that they have a new access pattern where the application has to perform strongly consistent queries on an attribute that's not the partition key.

How can the team solve this problem?

- Create a new GSI.

Create a new LSI.

Create a new DynamoDB table.

Explanation:-the requirement is to perform strongly consistent queries on a new partition key. In this scenario, a new DynamoDB table must be created as GSI only supports eventual consistency.

Create a DynamoDB Accelerator (DAX) cluster.

Q13)

A solution architect would like to implement a caching solution for an application. The application is read-heavy performing frequent read operations. The application load is very unpredictable, so the solution architect would like to be able to horizontally scale the caching system up and down as required, while keeping the infrastructure costs minimal.

What is the optimal solution to this problem?

Deploy Amazon ElastiCache for Redis (Cluster Mode Enabled) cluster.

Deploy Amazon DAX cluster.

Deploy Amazon ElastiCache for Redis (Cluster Mode Disabled) cluster.

Explanation:-ElastiCache for Redis (Cluster Mode Disabled) clusters support scaling up or down of read capacity by creating or deleting read replicas within the cluster.

Implement Write-Through caching strategy.

Q14)

A company based in North America wishes to expand their operation to the European regions. They wish to perform some performance testing and UAT on production like data of their DynamoDB-based backend system in the European regions.

What is the optimal solution for achieving data migration to enable the team to perform their testing tasks?

Create a new DynamoDB table in the new region. Create an AWS Glue job to perform a data export from the current DynamoDB table and data import into the new DynamoDB table.

Enable DynamoDB Streams. Add a European region to the current DynamoDB table Global Tables setting.

Enable DynamoDB Streams on the current DynamoDB table. Create a new DynamoDB table in the new region. Create a Lambda function to poll the current DynamoDB table stream and deliver batch records from streams to the new DynamoDB table.

Perform Point-in-Time Recovery of their current DynamoDB table into the new region.

Explanation:-DynamoDB Point-in-Time Restore enables recovery of a DynamoDB table across AWS regions. Further it enables full table restore, as well restore of GSI's and LSI's. Restoring a DynamoDB table using Point-in-Time restore consumes no provisioned throughput. Data transfer charges between the regions are the only costs associated with this solution.

Q15)

An Amazon RDS MySQL database instance is failing to reboot. Event logs show an error: "MySQL could not be started due to incompatible parameters".

What actions must be performed to resolve this issue?

Compare the RDS database instance DB parameter group to the default parameter. Reset any custom parameters to their default values. Reboot the instance.

Explanation:-one (or more) parameters are set to non-default values that are not compatible with the current RDS engine or instance class. To resolve the issue, you must reset the parameters to their default values.

Modify the RDS database instance to use the default DB Parameter Group. Reboot the instance.

Use SELECT VARIABLE_NAME, SESSION_VALUE, GLOBAL_VALUE statement to identify system variables that have custom values. Use SET statement to set any modified system variables to their default values.

Select the default DB Parameter group in the RDS console. Choose the Reset Parameter Group Action to revert the parameters to their default values.

Q16)

An RDS DBA changes the time zone of a Maria DB RDS Instance by setting the dynamic parameter time_zone in the DB Parameter Group to the local time zone of the application. An application user is still reporting incorrect time zone.

What actions should the DBA perform to resolve the issue (choose two)?

Use rdsadmin.rdsadmin_util.alter_db_time_zone procedure to update the RDS instance time zone to value set in the DB Parameter Group.

Instruct the application developers to update the application code to use the dynamic parameter type for the time_zone parameter.

Reboot the RDS DB instance.

Instruct the application user to disconnect from the database and start a new session.

Explanation:-the time zone change takes effect on any new sessions to the database. Any open connections to the database will use the session time zone. To resolve the issue, the user must close the current connection and open a new connection.

Ensure that the DB Parameter Group is applied to the RDS instance.

Explanation:-the custom DB Parameter Group where the time_zone parameter was set must be applied to the RDS instance.

Q17)

An application uses GetItem operation to read data from a DynamoDB table.

What strategy can be used to reduce the size of the read operations and increase read efficiency?

Use Filter Expression

Use Pagination

Use Parallel Scan

✅ Use Projection Expression

Explanation:-Projection Expressions can be used to limit the attributes returned by the GetItem operation and thus reduce the size of the read operation.

Q18)

A company is migrating their on-premise data warehouse to Amazon Redshift.

What methods can be used to establish a private connection from on-premise network to Amazon Redshift (Select TWO)?

✅ Direct Connect

Explanation:-AWS Direct Connect can be used to establish a secure and private connection between on-premise network and Amazon VPC over a dedicated line.

✅ Site-to-site VPN

Explanation:-Site-to-site VPN can be used to establish a secure and private connection between an on-premise network and Amazon VPC over Internet.

- VPC Peering
- PrivateLink Interface Endpoint
- PrivateLink Gateway Endpoint

Q19)

A company security team has mandated that user access to Amazon Aurora cluster must be controlled via IAM.

Which solution below implements this requirement?

- Modify the Aurora cluster to enable IAM authentication. Create an IAM role with rds-db:connect action to the database. Use AWS STS AssumeRole API.
- Modify the Aurora cluster to enable IAM authentication. Apply IAM policy that allows rds-db:connect action to the user. Use AWS STS GetSessionToken API.
- Modify the Aurora cluster to enable IAM authentication. Create an Amazon Cognito User Pool. Create an IAM role with rds-db:connect action to the database. Apply Rule-based mapping to Cognito User Pool to the IAM role.

✅ Modify the Aurora cluster to enable IAM authentication. Grant rds_iam privilege to the user. Apply IAM policy that allows rds-db:connect action to the user.

Explanation:-Amazon Aurora supports IAM authentication. In order to utilize this feature, the database cluster must be modified to enable IAM authentication. Then a database user must be created and rds_iam privilege must be granted to the user. Finally, the user must have rds-db:connect IAM permissions in order to connect to the database. This can be granted using IAM policy.

Q20)

An application development team complains that they are experiencing performance issues with ElastiCache. After investigation, a database specialist determines that the performance issues occur during the automated back-up window.

What actions can the specialist perform to improve backup performance (select TWO)?

✅ Create backups from a read replica.

Explanation:-by performing backups from one of the read replicas, the primary node remains unaffected and can continue serving requests without any performance degradation.

✅ Set the reserved-memory-percent parameter.

Explanation:-reserved-memory-percent parameter specifies the amount of memory available for non-data use. Setting or increasing this parameter value for cluster nodes can improve performance during backups since more memory will be allocated for the backup processes.

- Schedule automated back-up window to occur at midnight.
- Increase the number of shards.
- Perform a resharding operation.

Q21)

A user is connecting to a SQL Server on Amazon RDS database.

How should the user configure the connection parameters so that the client connection is protected against man-in-the-middle attack?

✅ encrypt=true;trustServerCertificate=false

Explanation:-setting trustServerCertificate property to false ensures that the client will validate the TLS certificate and confirm that the server is the correct server to connect to.

- --ssl-ca=/home/myuser/rds-combined-ca-bundle.pem --ssl-mode=verify-full
- encrypt=true;trustServerCertificate=true
- --ssl-ca=/home/myuser/rds-combined-ca-bundle.pem --ssl-mode=require
- Set ssl_server_dn_match property to true
