70-764 Q&As

Administering a SQL Database Infrastructure

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QUESTION 1

You have a server named SQL1 that has SQL Server 2012 installed. SQL1 hosts a database named Database1.

Database1 contains a table named Table1. Table1 is partitioned across five filegroups based on the Date field. The schema of Table1 is configured as shown in the following table.

Column	Data type
ID	Bigint
Account	Bigint
Amount	Decimal
TransactionType	Int
TransactionDate	Date

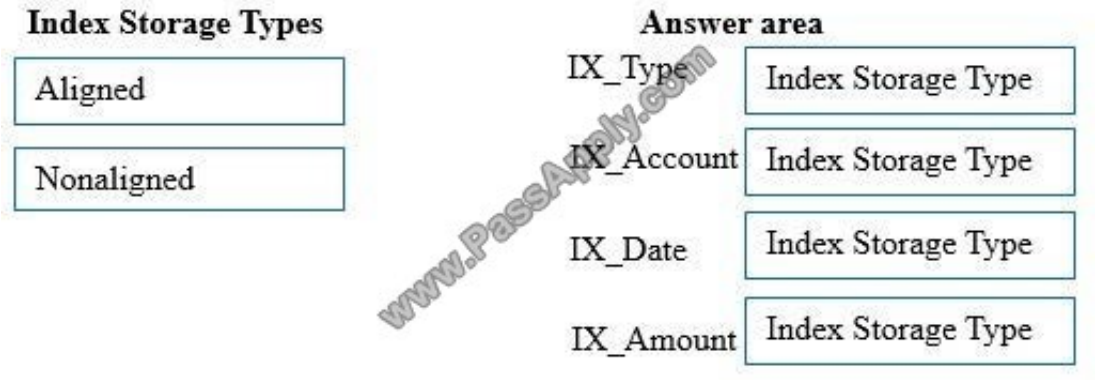
Table1 contains the indexes shown in the following table.

Index	Type	Columns
PK_Table1	Clustered, primary key	ID, TransactionDate
IX_Account	Nonclustered	Account
IX_Type	Nonclustered	TransactionType
IX_Date	Nonclustered	TransactionDate
IX_Amount	Nonclustered	Amount

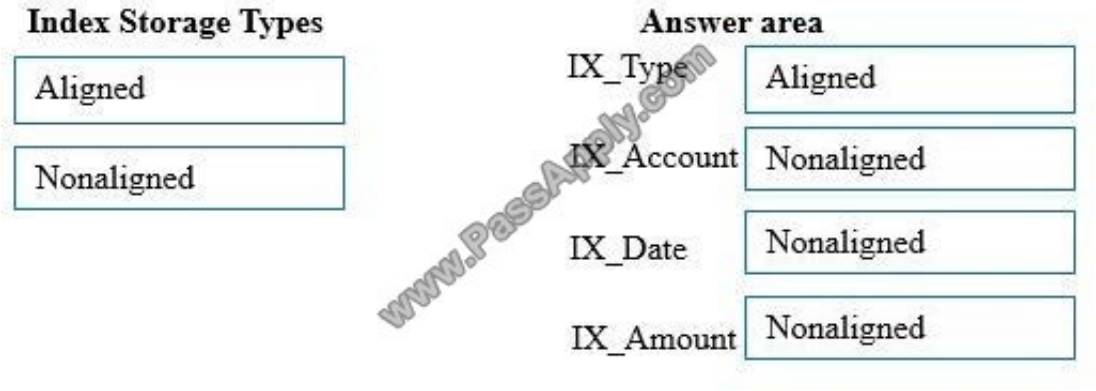
You need to recommend an index strategy to maximize performance for the queries that consume the indexes available to Table1.

Which type of index storage should you recommend? To answer, drag the appropriate index storage type to the correct index in the answer area.

Select and Place:



Correct Answer:



Index Storage Type

Designing a partitioned index independently (unaligned) of the base table can be useful in the following cases:

-The base table has not been partitioned.

-The index key is unique and it does not contain the partitioning column of the table.

-You want the base table to participate in collocated joins with more tables using different join columns.

QUESTION 2

You administer a Windows Azure SQL Database database named Human_Resources. The database contains 2 tables named Employees and SalaryDetails. You add two Windows groups as logins for the server:

CORP\Employees - All company employees

CORP\HRAdmins - HR administrators only

HR Administrators are also company employees.

You need to grant users access according to the following requirements:

CORP\Employees should have SELECT access to the Employees table.

Only users in CORP\HRAdmins should have SELECT access to the SalaryDetails table.

Logins are based only on Windows security groups.

What should you do?

A. Create a database role called Employees. Add CORP\Employees to the db_datareader role. Add all company employees except HR administrators to the Employees role. Deny SELECT access to the SalaryDetails table to the Employees role.

B. Create a database role called HRAdmins. Add all company employees except HR administrators to the db_datareader role, Add all HR administrators to the HRAdmins role. Grant SELECT access to the SalaryDetails table to the HRAdmins role. Deny SELECT access to the SalaryDetails table to the db_datareader role.

C. Create two database roles: Employees and HRAdmins. Add all company employees to the Employees role. Add HR administrators to the HRAdmins role. Grant SELECT access to all tables except SalaryDetails to the Employees role.

Grant SELECT access to the SalaryDetails table to the HRAdmins role. Deny SELECT access to the SalaryDetails table to the Employees role.

D. Create a database role called Employees. Add all HR administrators to the db_datareader role. Add all company employees to the Employees role. Grant SELECT access to all tables except the SalaryDetails table to the Employees role. Deny SELECT access to the SalaryDetails table to the Employees role.

Correct Answer: D

QUESTION 3

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while

others might not have a correct solution.

After you answer a question in this sections, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You have a database that includes a table named Candidate.

You need to update the statistics for a column named Skills in the table and turn off automatic statistics updates for the column.

Solution: You run the following query:

```
USE CustomerDatabase
GO
UPDATE STATISTICS Person.Candidate(Skills)
WITH FULLSCAN
GO
```

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Does this meet the goal?

A. Yes

B. No

Correct Answer: B

The line WITH FULLSCAN should be replaced with WITH FULLSCAN, NORECOMPUTE. References: https://docs.microsoft.com/en-us/sql/t-sql/statements/update-statistics-transact-sql

QUESTION 4

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while

others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

Your company is developing a new business intelligence application that will access data in a Microsoft Azure SQL Database instance. All objects in the instance have the same owner.

A new security principal named BI_User requires permission to run stored procedures in the database. The stored procedures read from and write to tables in the database. None of the stored procedures perform IDENTIFY_INSERT

operations or dynamic SQL commands.

The scope of permissions and authentication of BI_User should be limited to the database. When granting permissions, you should use the principle of least privilege.

You need to create the required security principals and grant the appropriate permissions.

Solution: You run the following Transact-SQL statement in the master database:

CREATE LOGIN BI_User WITH PASSWORD = `Pa$$w ?d\\'

You run the following Transact-SQL statement in the business intelligence database:

```
CREATE USER BI_User FROM LOGIN BI_User
GRANT EXECUTE TO BI_User
EXEC sp_addrolemember 'db_datareader', 'BI_user'
EXEC sp_addrolemember 'db_datawriter', 'BI_user'
```

Does the solution meet the goal?

A. Yes

B. No

Correct Answer: B

It is enough to grant EXECUTE permissions on the stored procedures for database roles you want to be able to access the data. We do not need to add roles to this user.

Note:

One method of creating multiple lines of defense around your database is to implement all data access using stored procedures or user-defined functions. You revoke or deny all permissions to underlying objects, such as tables, and grant

EXECUTE permissions on stored procedures. This effectively creates a security perimeter around your data and database objects.

Best Practices

Simply writing stored procedures isn\\'t enough to adequately secure your application. You should also consider the following potential security holes.

Grant EXECUTE permissions on the stored procedures for database roles you want to be able to access the data.

Revoke or deny all permissions to the underlying tables for all roles and users in the database, including the public role. All users inherit permissions from public. Therefore denying permissions to public means that only owners and sysadmin

members have access; all other users will be unable to inherit permissions from membership in other roles.

Do not add users or roles to the sysadmin or db_owner roles. System administrators and database owners can access all database objects.

References: https://docs.microsoft.com/en-us/dotnet/framework/data/adonet/sql/managing-permissions-with-stored-procedures-in-sql-server

QUESTION 5

You install a Microsoft SQL Server 2016 instance.

The instance will store data extracted from two databases running on Windows Azure SQL Database.

You hire a data steward to perform interactive data cleansing and ad hoc querying and updating of the database.

You need to ensure that the data steward is given the correct client tools to perform these tasks.

Which set of tools should you install?

A. SQL Server Management Studio and Distributed Replay Client

B. Master Data Services and Data Quality Client

C. Data Quality Client and Distributed Replay Client

D. Data Quality Client and SQL Server Management Studio

Correct Answer: B

QUESTION 6

You are a database administrator for an organization.

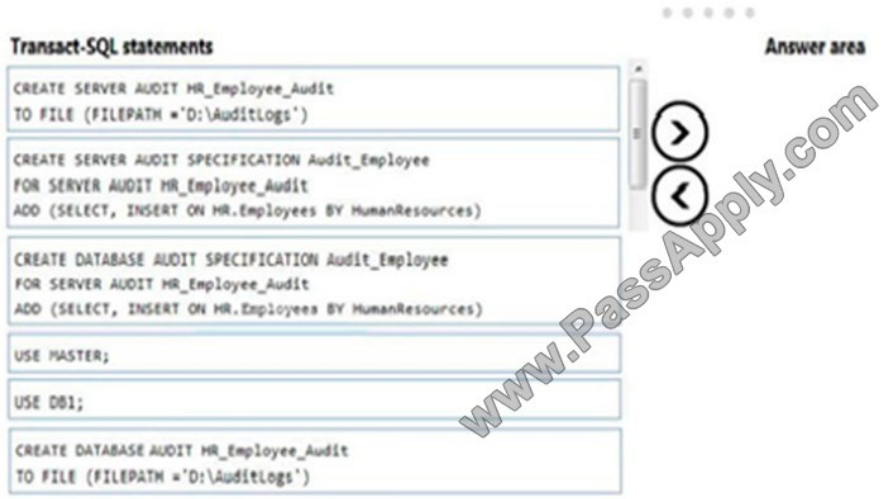
Members of the human resources department can add new employee records to the HR.Employees table. All members of the human resources department can add new employee records to the HR.Employees table. All members of the

human resources department are assigned the Human Resources database role.

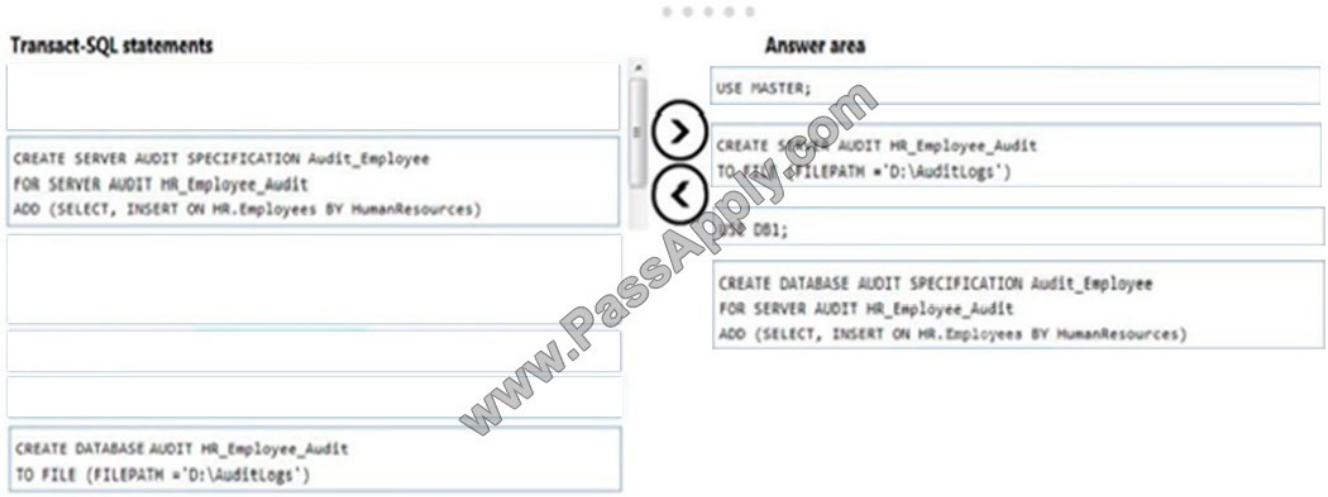
You need to audit inserts to the table.

Which four transact-SQL statements should you use to develop the solution? To answer, move the appropriate Transact-SQL statements from the list of transact-SQL statements to the answer area and arrange them in the correct order.

Select and Place:



Correct Answer:



Box 1: Use MASTER;

Box 2: CREATE SERVER AUDIT ...

Only specify the file path.

Box 3: Use DB1;

Box 4: CREATE DATABASE AUDIT..

Specify the table etc.

References: https://docs.microsoft.com/en-us/sql/t-sql/statements/create-database-audit-specification-transact-sql?view=sql-server-2017

QUESTION 7

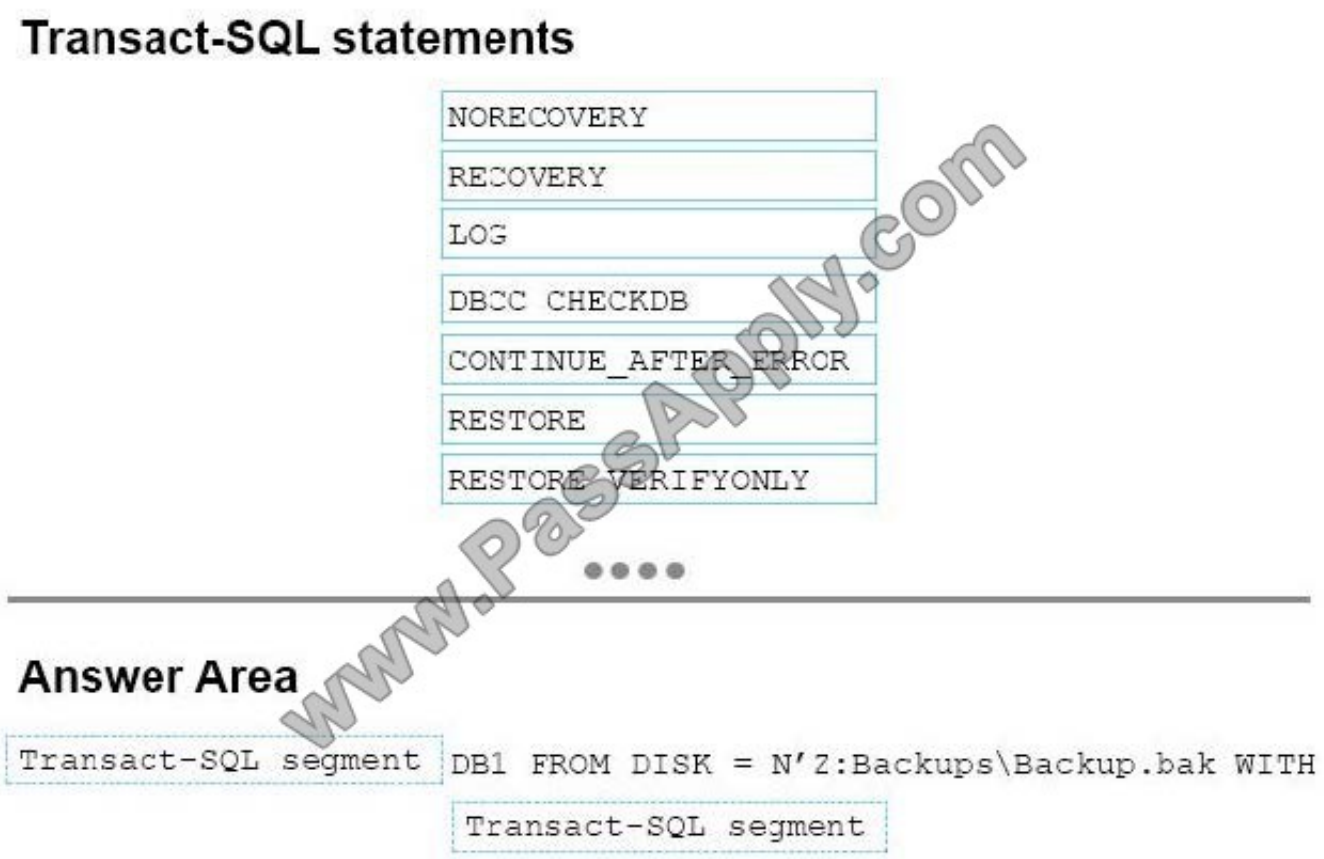
You have a test server that contains a database named DB1. Backups of the database are written to a single backup device. The backup device has a full, differential, and transaction log backup.

You discover that the database is damaged. You restore the database to the point at which the differential backup was taken.

You need to rebuild the database with data stored in the latest transaction logs.

How should you complete the Transact-SQL statement? To answer. drag the appropriate Transact-SQL segments to the correct locations. Each Transact-SQL segment may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

Select and Place:



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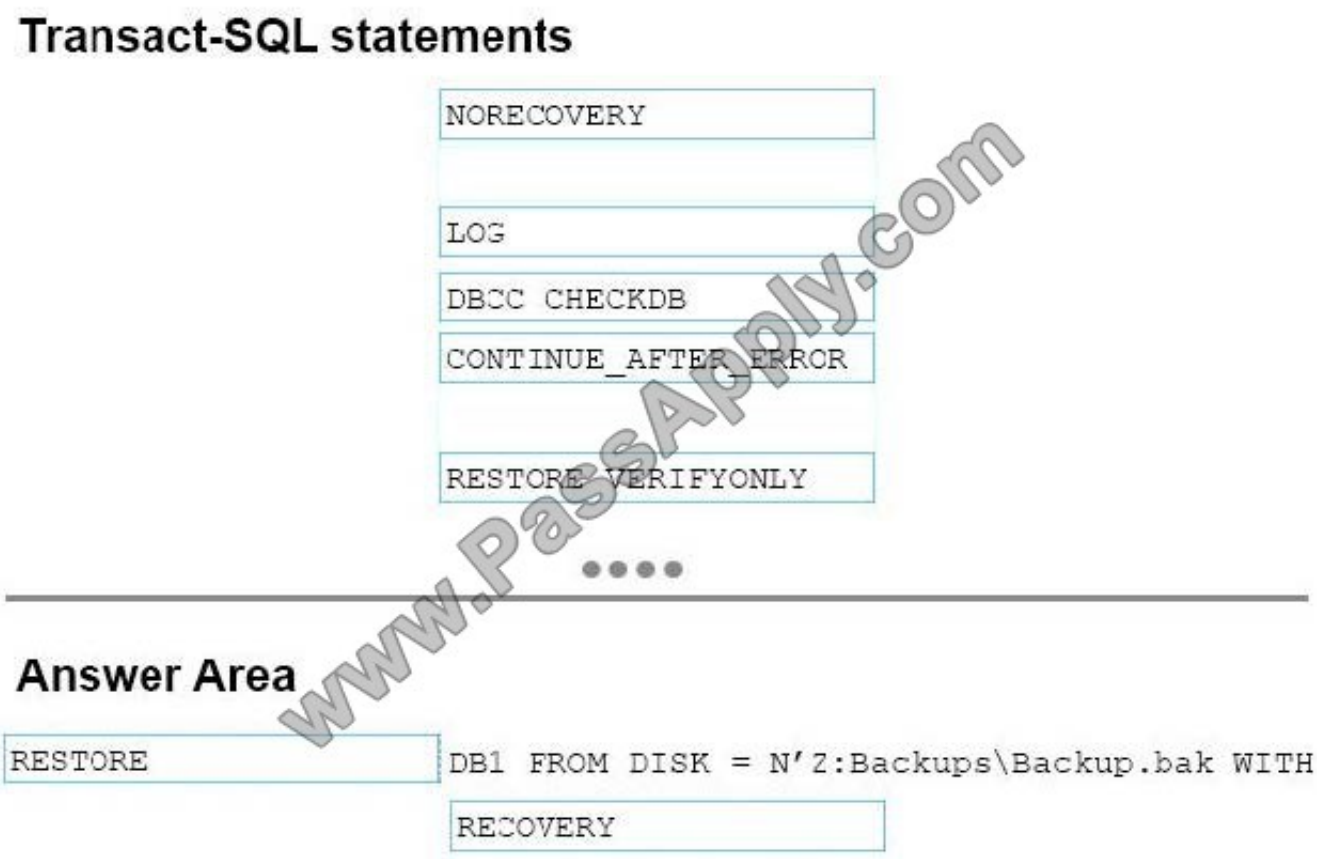
Correct Answer:



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Box 1: RESTORE Box 2: RECOVERY The RESTORE ... WITH RECOVERY option puts the database into a useable state, so users can access a restored database.

References: https://www.mssqltips.com/sqlservertutorial/112/recovering-a-database-that-isin-the-restoring-state/

QUESTION 8

You administer several Microsoft SQL Server 2016 database servers.

Merge replication has been configured for an application that is distributed across offices throughout a wide area network (WAN). Many of the tables involved in replication use the XML and varchar (max) data types.

Occasionally, merge replication fails due to timeout errors.

You need to reduce the occurrence of these timeout errors.

What should you do?

A. Set the Merge agent on the problem subscribers to use the slow link agent profile.

B. Create a snapshot publication, and reconfigure the problem subscribers to use the snapshot publication.

C. Change the Merge agent on the problem subscribers to run continuously.

D. Set the Remote Connection Timeout on the Publisher to 0.

Correct Answer: A

You might have different profiles for different instances of an agent. For example, a Merge Agent that connects to the Publisher and Distributor over a dialup connection could use a set of parameters that are better suited to the slower communications link by using the slow link profile.

Note: When replication is configured, a set of agent profiles is installed on the Distributor. An agent profile contains a set of parameters that are used each time an agent runs: each agent logs in to the Distributor during its startup process and queries for the parameters in its profile.

References: https://docs.microsoft.com/en-us/sql/relational-databases/replication/agents/replication-agent-profiles

QUESTION 9

Note: This question is part of a series of questions that use the same or similar answer choices. An answer choice may be correct for more than one question in the series. Each question is independent of the other questions in this series.

Information and details provided in a question apply only to that question.

You are the database administrator for a company that hosts Microsoft SQL Server. You manage both on-premises and Microsoft Azure SQL Database environments.

Clients connect to databases by using line-of-business applications. Developers connect by using SQL Server Management Studio (SSMS).

You need to provide permissions to a service account that will be used to provision a new database for a client.

Which permission should you grant?

A. DDLAdmin

B. db_datawriter

C. dbcreator

D. dbo

E. View Database State

F. View Server State

G. View Definition

H. sysadmin

Correct Answer: C

Members of the dbcreator fixed server role can create, alter, drop, and restore any database.

References: https://docs.microsoft.com/en-us/sql/relational-databases/security/authentication-access/server-level-roles

QUESTION 10

You have five servers that run Microsoft SQL Server. Each server hosts multiple databases. You plat to implement fault tolerance.

You need to implement a fault tolerance solution that meets the following requirements:

Each database must use a separate fault tolerance configuration.

The solution must support three or more copies of each database.

Failover of databases must be automatic.

What should you use?

A. Always On availability groups

B. database mirroring

C. transactional replication

D. log shipping

Correct Answer: A

An availability group supports a replicated environment for a discrete set of user databases, known as availability databases. You can create an availability group for high availability (HA) or for read-scale. An HA availability group is a group of databases that fail over together.

Each set of availability database is hosted by an availability replica. Two types of availability replicas exist: a single primary replica. which hosts the primary databases, and one to eight secondary replicas, each of which hosts a set of secondary databases and serves as a potential failover targets for the availability group.

References: https://docs.microsoft.com/en-us/sql/database-engine/availability-groups/windows/overview-of-always-on-availability-groups-sql-server?view=sql-server-2017

QUESTION 11

Background

Corporate Information

Fabrikam, Inc. is a retailer that sells electronics products on the Internet. The company has a headquarters site and one satellite sales office. You have been hired as the database administrator, and the company wants you to change the architecture of the Fabrikam ecommerce site to optimize performance and reduce downtime while keeping capital expenditures to a minimum. To help with the solution, Fabrikam has decided to use cloud resources as well as on-premise servers.

Physical Locations

All of the corporate executives, product managers, and support staff are stationed at the headquarters office. Half of the sales force works at this location. There is also a satellite sales office. The other half of the sales force works at the satellite office in order to have sales people closer to clients in that area. Only sales people work at the satellite location.

Problem Statement

To be successful, Fabrikam needs a website that is fast and has a high degree of system uptime. The current system operates on a single server and the company is not happy with the single point of failure this presents. The current nightly

backups have been failing due to insufficient space on the available drives and manual drive cleanup often needing to happen to get past the errors. Additional space will not be made available for backups on the HQ or satellite servers.

During your investigation, you discover that the sales force reports are causing significant contention.

Configuration

Windows Logins

The network administrators have set up Windows groups to make it easier to manage security. Users may belong to more than one group depending on their role. The groups have been set up as shown in the following table:

Group	Members
OurDomain\Management	All corporate executives
OurDomain\SalesStaff	All sales people
OurDomain\ProductionStaff	All product managers and support staff
OurDomain\AllUsers	Everyone
OurDomain\CustomerSupport	Customer support representatives

Server Configuration The IT department has configured two physical servers with Microsoft Windows Server 2012 R2 and SQL Server 2014 Enterprise Edition and one Windows Azure Server. There are two tiers of storage available for use by database files only a fast tier and a slower tier. Currently the data and log files are stored on the fast tier of storage only. If a possible use case exists, management would like to utilize the slower tier storage for data files. The servers are configured as shown in the following table:

Location	Server
Company headquarters	HQ_Server
Satellite sales office	Satellite_Server
Microsoft Windows Azure (cloud)	Cloud_File Server

Database

Currently all information is stored in a single database called ProdDB, created with the following script:

```
CREATE DATABASE ProdDB
GO
ALTER DATABASE ProdDB SET RECOVERY SIMPLE
GO
```

The Product table is in the Production schema owned by the ProductionStaff Windows group. It is the main table in the system so access to information in the Product table should be as fast as possible. The columns in the Product table are defined as shown in the following table:

Column	Data type
ProductID	INT
ProductName	VARCHAR(100)
ProductDescription	VARCHAR(MAX)
ProductPrice	SMALLMONEY
QuantityOnHand	INT
ProductCost	SMALLMONEY
ProductSupplierID	INT

The SalesOrderDetail table holds the details about each sale. It is in the Sales schema owned by the SalesStaff Windows group. This table is constantly being updated, inserted into, and read. The columns in the SalesOrderDetail table are defined as shown in the following table:

Column	Data type
SalesOrderDetailID	INT
ProductID	INT
SalePrice	SMALLMONEY
SaleQuantity	INT

Database Issues

The current database does not perform well. Additionally, a recent disk problem caused the system to go down, resulting in lost sales revenue. In reviewing the current system, you found that there are no automated maintenance procedures.

The database is severely fragmented, and everyone has read and write access.

Requirements

Database

The database should be configured to maximize uptime and to ensure that very little data is lost in the event of a server failure. To help with performance, the database needs to be modified so that it can support in-memory data, specifically

for the Product table, which the CIO has indicated should be a memoryoptimized table. The auto-update statistics option is set off on this database. Only product managers are allowed to add products or to make changes to the name,

description, price, cost, and supplier. The changes are made in an internal database and pushed to the Product table in ProdDB during system maintenance time. Product managers and others working at the headquarters location also should

be able to generate reports that include supplier and cost information.

Customer data access

Customers access the company\\'s website to order products, so they must be able to read product information such asname, description, and price from the Product table. When customers place orders, stored procedures calledby the website

update product quantityon-hand values. This means the product table is constantly updated at randomtimes.

Customer support data access

Customer support representatives need to be able to view and not update or change product information. Management does not want the customer support representatives to be able to see the product cost or any supplier information.

Sales force data access

Sales people at both the headquarters office and the satellite office must generate reports that read from the Product and SalesOrderDetail tables. No updates or inserts are ever made by sales people. These reports are run at random times

and there can be no reporting downtime to refresh the data set except during the monthly maintenance window.

The reports that run from the satellite office are process intensive queries with large data sets. Regardless of which office runs a sales force report, the SalesOrderDetail table should only return valid, committed order data; any orders not yet

committed should be ignored.

Historical Data

The system should keep historical information about customers who access the site so that sales people can see how frequently customers log in and how long they stay on the site.

The information should be stored in a table called Customer Access. Supporting this requirement should have minimal impact on production website performance.

Backups

The recovery strategy for Fabrikam needs to include the ability to do point in time restores and minimize the risk of data loss by performing transaction log backups every 15 minutes.

Database Maintenance

The company has defined a maintenance window every month when the server can be unavailable. Any maintenance functions that require exclusive access should be accomplished during that window.

Project milestones completed

Revoked all existing read and write access to the database, leaving the schema ownership in place.

Configured an Azure storage container secured with the storage account name MyStorageAccount with the primary access key StorageAccountKey on the cloud file server.

SQL Server 2014 has been configured on the satellite server and is ready for use.

On each database server, the fast storage has been assigned to drive letter F:,

and the slow storage has been assigned to drive letter D:.

You need to create the CustomerAccess table to support the reporting and performance requirements.

Develop the solution by selecting and arranging the required code blocks in the correct order. You may not need all of the code blocks.

Select and Place:

Code Blocks

```
CREATE TABLE [CustomerAccess]
ON [CustomerAccessFG] (
```

```
CustomerAccessID INT IDENTITY(1,1)
NOT NULL PRIMARY KEY
, CustomerID INT NOT NULL
, LoginDate DATETIME NOT NULL
, LogoffDate DATETIME NULL
```

```
CREATE TABLE [CustomerAccess] (
```

```
ALTER DATABASE [ProdDB] ADD FILE
(NAME = N'ProdDB_CustomerAccess',
FILENAME = N'F:\Data
\ProdDB_CustomerAccess.ndf') TO
FILEGROUP [CustomerAccessFG]
```

```
ALTER DATABASE [ProdDB] ADD FILE
(NAME = N'ProdDB_CustomerAccess',
FILENAME = N'D:\Data
\ProdDB_CustomerAccess.ndf') TO
FILEGROUP [CustomerAccessFG]
```

```
) ON [ProdDB_CustomerAccess]
```

```
) ON [CustomerAccessFG]
```

```
ALTER DATABASE [ProdDB] ADD FILE
(NAME = N'ProdDB_CustomerAccess',
FILENAME = N'D:\Data
\ProdDB_CustomerAccess.ndf')
```

```
)
```

```
ALTER DATABASE [ProdDB] ADD
FILEGROUP [CustomerAccessFG]
```

Answer Area

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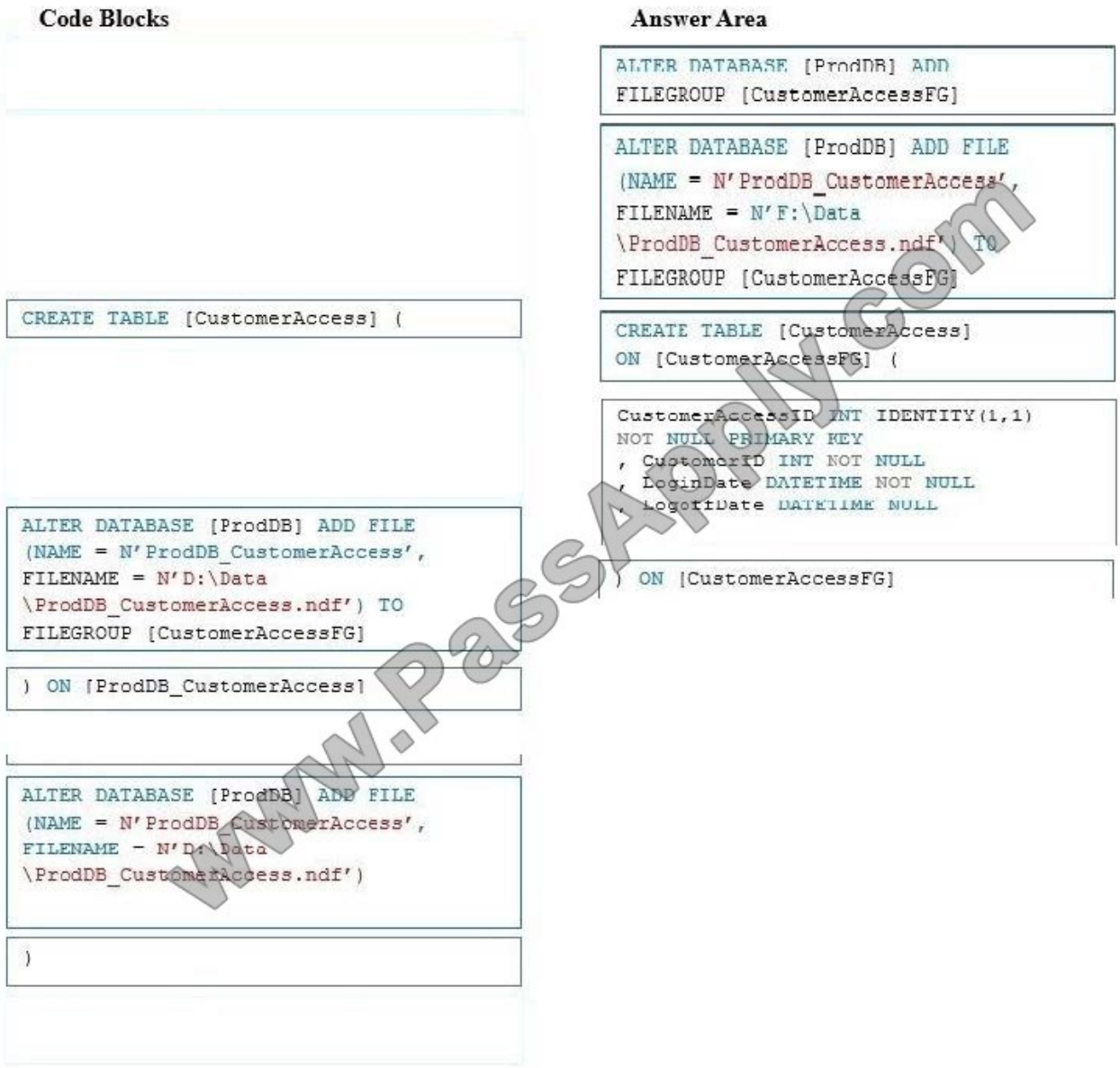
Correct Answer:



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QUESTION 12

Your organization is developing a web application. The application will access data from a Microsoft SQL Server database.

You must implement a security solution that meets the following requirements:

• All user logins must be associated with an Active Directory

• Service accounts are not permitted.

• Constrained database are not permitted.

• Users must not be able to log on to SQL Server as the web application and access the database.

• The web application must be permitted to display records to the and add the database.

You need 10 implement the required security and permitted structure for the web application while the principle of least privilege.

Which settings should you use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

Correct Answer:

QUESTION 13

General Overview

You are the Senior Database Administrator (DBA) for a manufacturing company named Fairstone Manufacturing.

Fairstone Manufacturing is based in the New York area. The company has two offices: a main office in the city and a branch office just outside the city. The company has four factories where their products are manufactured. Two factories are

in the New York area and the other two factories are in Washington.

Network Connectivity

The two offices are connected by a 10 Mbps dedicated WAN link.

SQL Server Environment

The main office has four SQL Server 2012 Standard Edition servers named MainDB1, MainDB2, MainDB3 and MainDB4. The branch office has two SQL Server 2012 Standard Edition servers named BranchDB1 and BranchDB2. The main

office has a Development department. All databases used by the Development department are hosted on MainDB3 and MainDB4. MainDB1 and MainDB2 host the following databases:

Products

Manufacturing

Sales

HR

Customers

DailyReportsTemp

BranchDB1 and BranchDB2 host the same databases as MainDB1 and MainDB2. The DailyReportsTemp database is a temporary database that is recreated every day and used for reporting purposes. One of the tables in the Customer

database lists all the customers. Another table linked to the customers table contains a list of classifications for the customers. The classifications are Hot, Warm and Cold based on the number of orders placed by the customers in the last

year. The customers are classified according to the following criteria:

Hot - Over 100 orders placed in a year.

Warm - Between 50 and 100 orders placed in a year.

Cold - Under 50 orders placed in a year.

Stored Procedures

Three tables in the Manufacturing database are modified by a stored procedure named ManProc1.

A segment of code from ManProc1 is as follows:

```
CREATE PROCEDURE Manufacturing.ManProc1
AS
BEGIN TRANSACTION
UPDATE Manufacturing.Type …
UPDATE Manufacturing.Version …
UPDATE Manufacturing.Revision …
COMMIT TRANSACTION
GO
```

The same three tables are also modified by a stored procedure named ManProc2. A segment of code from ManProc2 is as follows:

```
CREATE PROCEDURE Manufacturing.ManProc2
AS
BEGIN TRANSACTION
UPDATE Manufacturing.Revision …
UPDATE Manufacturing.Type …
UPDATE Manufacturing.Version …
COMMIT TRANSACTION
GO
```

A product list in the Products database is updated using information from tables in the Manufacturing database by a stored procedure named ProductUpdateProc. Locks on tables in the Manufacturing database often cause

ProductUpdateProc to take a long time to complete.

A list of manufacturing processes required to create each product is stored in tables in the Manufacturing database and updated by a stored procedure named ProcessUpdateProc. The ProcessUpdateProc stored procedure contains several

UPDATE statements. The UPDATE statements are configured to be called in a specific order. The ProcessUpdateProc stored procedure continues to run in the event of a failure of one of the UPDATE statements.

This can cause inaccurate results in the manufacturing process list.

Sales Director Statement

The Sales Director has made the following observations about the current database design:

The current customer classification system needs to be changed.

Currently the customers are classified by the number of orders placed in the last year.

This information is an unreliable guide as it does not take in to account the size of the orders.

I would suggest a trial run of a classification system based on the revenue generated by the orders placed in the last year.

We may add more than the current three classification types in future.

We should have a method of recording changes to the classifications.

IT Manager Statement

The IT Manager has listed the following requirements for the SQL Server and database environment:

We need to provide a group of users from the IT and Manufacturing departments the minimum administrative rights to view database information and server state for the Manufacturing database on MainDB1.

The Sales database takes too long to back up due to the large amount of historical sales order data in the database. We need to reduce the backup time for this database.

The DailyReportsTemp database takes four hours to back up. We need to be able to recover the DailyReportsTemp database in less than one hour if the database storage hardware fails.

We need to be able to immediately return the Manufacturing database to its previous state if the ProcessUpdateProc stored procedure fails to update the process information correctly.

I also want the ProcessUpdateProc stored procedure to stop running in the event of a failure of one of the UPDATE statements.

IT Administrators need to be able to monitor the disk space used on the SQL Servers by running real-time reports on the disk usage.

The Developers would like to install second instances of SQL Server on MainDB3 and MainDB4.

They would like to assign each instance to specific processors on the SQL Servers.

You need to enable the Developers to assign SQL Server instances on MainDB3 and MainDB4 to specific processors on the servers. What should you configure?

A. Windows System Resource Manager (WSRM)

B. Resource Governor

C. A Maintenance Plan

D. Processor Affinity

Correct Answer: D

QUESTION 14

You are building a stored procedure for a SQL Azure database. The procedure will add multiple rows to a table. You need to design the stored procedure to meet the following requirements:

If any of the new rows violates a table constraint, then no further additions must be attempted and all changes made by the stored procedure must be discarded.

If any errors occur, a row must be added to an audit table, and the original error must be returned to the caller of the stored procedure.

What should you include in the design?

A. An implicit transaction that has XACT_ABORT enabled

B. An explicit transaction that has XACT_ABORT disabled

C. An implicit transaction that has error handling enabled

D. An explicit transaction that has error handling enabled

Correct Answer: D

References: http://technet.microsoft.com/en-us/library/ms175127(v=SQL.105).aspx

QUESTION 15

Overview

You are a database administrator for a company named Litware, Inc.

Litware is a book publishing house. Litware has a main office and a branch office.

You are designing the database infrastructure to support a new web-based application that is being developed.

The web application will be accessed at www.litwareinc.com. Both internal employees and external partners will use the application.

You have an existing desktop application that uses a SQL Server 2008 database named App1_DB.

App1_DB will remain in production.

Requirements

Planned Changes

You plan to deploy a SQL Server 2014 instance that will contain two databases named Database1 and Database2.

All database files will be stored in a highly available SAN.

Database1 will contain two tables named Orders and OrderDetails.

Database1 will also contain a stored procedure named usp_UpdateOrderDetails.

The stored procedure is used to update order information. The stored procedure queries the Orders table twice each time the procedure executes. The rows returned from the first query must be returned on the second query unchanged

along with any rows added to the table between the two read operations.

Database1 will contain several queries that access data in the Database2 tables.

Database2 will contain a table named Inventory.

Inventory will contain over 100 GB of data.

The Inventory table will have two indexes: a clustered index on the primary key and a nonclustered index.

The column that is used as the primary key will use the identity property.

Database2 wilt contains a stored procedure named usp_UpdateInventory. usp_UpdateInventory will manipulate a table

that contains a self-join that has an unlimited number of hierarchies. All data in Database2 is recreated each day ad does

not change until the next data creation process. Data from Database2 will be accessed periodically by an external application named Application1. The data from Database2 will be sent to a database named Appl_Dbl as soon as changes

occur to the data in Database2. Litware plans to use offsite storage for all SQL Server 2014 backups.

Business Requirements

You have the following requirements:

Costs for new licenses must be minimized.

Private information that is accessed by Application must be stored in a secure format.

Development effort must be minimized whenever possible.

The storage requirements for databases must be minimized.

System administrators must be able to run real-time reports on disk usage.

The databases must be available if the SQL Server service fails.

Database administrators must receive a detailed report that contains allocation errors and data corruption.

Application developers must be denied direct access to the database tables. Applications must be denied direct access to the tables.

You must encrypt the backup files to meet regulatory compliance requirements.

The encryption strategy must minimize changes to the databases and to the applications.

You need to recommend a database reporting solution that meets the business requirements.

What should you include in the recommendation?

A. Data collection

B. Performance Monitor

C. A maintenance plan

D. A dynamic management view

Correct Answer: A

1.

Scenario: System administrators must be able to run real-time reports on disk usage.

2.

The data collector provides an historical report for each of the System Data collection sets. Each of the following reports use data that is stored in the management data warehouse: Disk Usage Summary

Query Statistics History

Server Activity History

You can use these reports to obtain information for monitoring system capacity and troubleshooting system performance.

QUESTION 16

You are troubleshooting an application that runs a query. The application frequently causes deadlocks. You need to identify which transaction causes the deadlock. What should you do? More than one answer choice may achieve the goal. Select the BEST answer.

A. Query the sys.dm_exec_requests dynamic management view.

B. Create a trace in SQL Server Profiler that contains the Deadlock graph event.

C. Query the sys.dm_exec_sessions dynamic management view.

D. Create an extended events session to capture deadlock information.

Correct Answer: D

Troubleshooting deadlocks

You have been receiving reports from users indicating that certain applications are returning deadlock errors. To maximize the effectiveness of troubleshooting these problems, you decide to focus on the deadlocks that are hit most frequently.

You create an Extended Events session that:

Configures deadlock event tracking for the session.

Specifies a target that aggregates based on an identifier for the deadlock.

You run the Extended Events session, and after additional deadlocks are reported you are able to obtain aggregated deadlock information, along with the complete XML deadlock graph for each source. Using this information, you are able to

pin point the most common deadlocks and start working on a solution.

QUESTION 17

You create a Management Data Warehouse instance and enable data collection. You have an Active Directory Domain Services (AD DS) group named SQLDevelopers.

Members of the SQLDevelopers group must be able to run reports that show information about Microsoft SQL Server waits and SQL Server activity.

You need to grant the developers permissions to run the reports by using the principle of least privilege.

What should you do?

A. In the msdb database, add SQLDevelopers to the mdw_admin role.

B. In the msdb database, add SQLDevelopers to the mdw_reader role.

C. In the MDW database, add SQLDevelopers to the db_datareader role.

D. In the MDW database, add SQLDevelopers to the mdw_admin role.

Correct Answer: C

Members of the mdw_reader role have Read access to the management data warehouse. Because the purpose of this role is to support troubleshooting by providing access to historical data, members of this role cannot view other elements

of the management data warehouse schema.

Note: The Server Activity data collection set collects information about resources used by the SQL Server instance (processor, memory, disk I/O, and network usage), SQL Server instance activity (batch requests, logouts, SQL compilations

and recompilations, transactions, user connections, and logins) and waits

Incorrect:

Members of the mdw_admin role have Read, Write, Update, and Delete access to the management data warehouse.

Members of this role can perform the following operations:

Change the management data warehouse schema when required (for example, adding a new table when a new collection type is installed).

Run maintenance jobs on the management data warehouse, such as archive or cleanup.

QUESTION 18

You manage a database named DB1 that uses the following filegroups:

Filegroup name	Size	Description	Backup logical device
PRIMARY	100 MB	Primary filegroup. Contains no business-related data. All files are stored on the D drive.	Backup1
FG1	10 GB	Filegroup has read/write access. Contains mission-critical data. All files are stored on the E drive.	Backup2
FG2	5 TB	Filegroup has read-only access. Contains historical data but no critical reporting data. All files are stored on the F drive. You create a backup after you configure the filegroup for read-only access.	Backup3
FG3	100 GB	Filegroup has read-only access. Contains mission-critical data. All files are stored on the E drive.	Backup2

The database is configured to use full recovery model. Transaction logs are backed up to a backup set named TLogBackup.

The PRIMARY and FG2 for DB1 are damaged. FG1 and FG3 are intact.

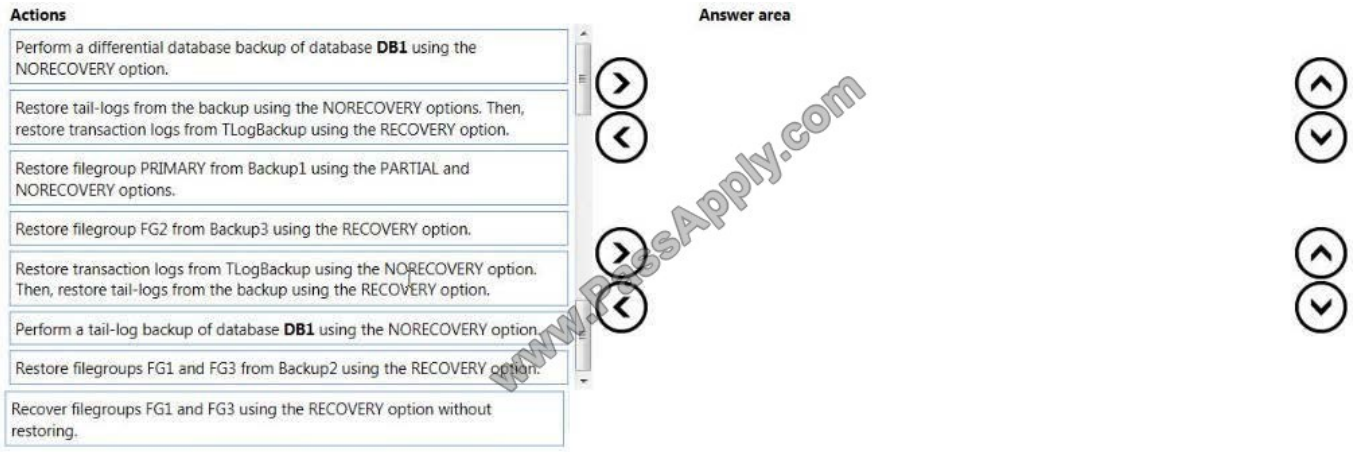
You need to design a piecemeal restore plan that meets all the above requirements. You need to bring critical filegroups online as soon as possible while minimizing restoration time. All damaged filegroups must be online after the restore

operation completes.

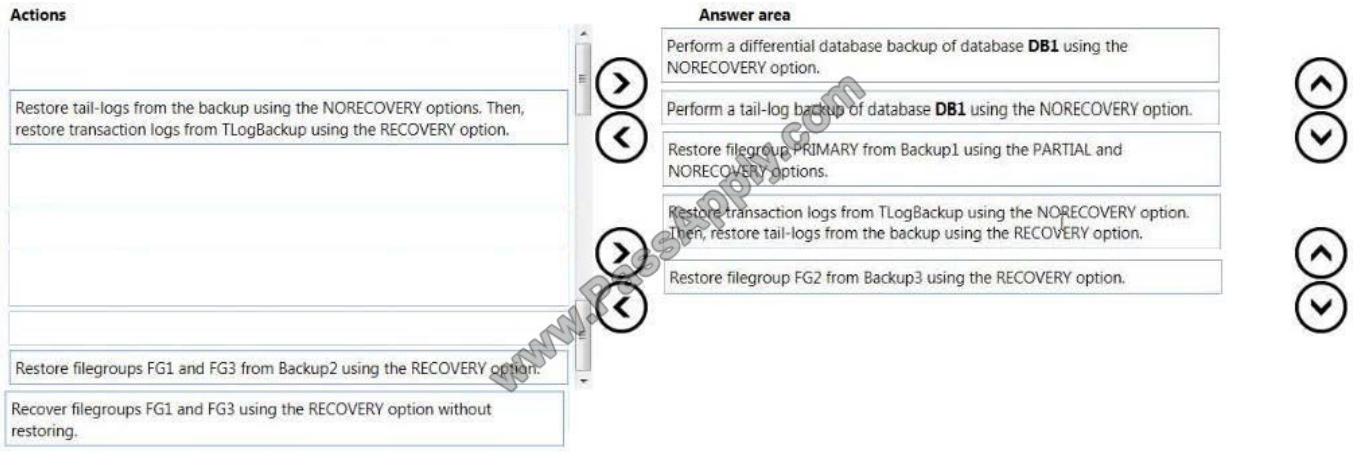
Which five actions should you perform in sequence? To ansjver, move the appropriate actions from the list of actions to

the answer area and arrange them in the correct order.

Select and Place:



Correct Answer:



Step 1: Perform a differential database backup…

Step 2: Perform a tail-log backup…

A tail-log backup captures any log records that have not yet been backed up (the tail of the log) to prevent work loss and to keep the log chain intact. Before you can recover a SQL Server database to its latest point in time, you must back up

the tail of its transaction log.

The tail-log backup will be the last backup of interest in the recovery plan for the database.

Step 3:

The PRIMARY and FG2 for DB1 are damaged. FG1 and FG3 are intact.

Step 4:

Transaction logs are backed up to a backup set named TLogBackup.

Step 5:

The PRIMARY and FG2 for DB1 are damaged.

References:

https://docs.microsoft.com/en-us/sql/relational-databases/backuprestore/restore-files-and-filegroups-sql-server?view=sql-server-2017

https://docs.microsoft.com/en-us/sql/relational-databases/backup-restore/tail-log-backupssql-server?view=sql-server-2017

QUESTION 19

HOTSPOT

Note: This question is part of a series of questions that use the same scenario. For your convenience, the scenario is repeated in each question. Each question presents a different goal and answer choices, but the next of thescenario is exactly the same in each question in this series.Start of repeated scenario

Contoso, Ltd. has Microsoft SQL Server databases that support a custom application. The current SQL Server environment consists of two servers: ContosoSQL1 and ContosoSQL2. These two servers participate in an Always On Availability

Group named ContosoAG1 that is configured to use synchronous-commit with automatic failover. The secondary replica is not configured for read-only access.

The application performs both transactional processing and historical data retrieval in a database named ContosoDB. The application includes an inventory management module. The inventory management module and database have

experienced performance issues.

Users report that a query named InventoryQuery1 takes a long time to complete. The query is shown as follows:

SELECT ProductNumber, Name, ProductLine

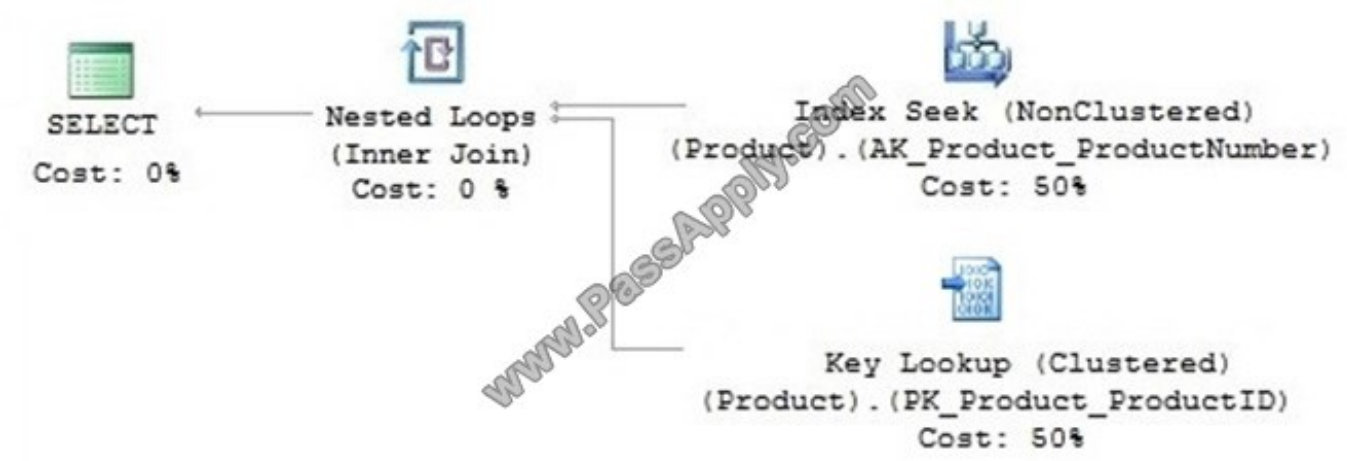
FROM Production.Product

WHERE ProductNumber = N\\'\\'

The query plan used by SQL Server for this query is shown in the exhibit. (Click the Exhibit tab.) Various performance issues, including frequent long-term blocking episodes, prevent business users from completing their daily tasks. You

suspect the tempdb database resources could be responsible. You must create Blocking reports for the ContosoDB database to identify issues.

Exhibit.



Hot Area:

Answer Area

What operator in the query plan for InventoryQuery1 is making the plan inefficient?

- SELECT
- Nested Loops
- Key Lookup (Clustered)
- Index Seek (NonClustered)

What change to the database should be implemented to improve this query's plan?

- Create a covering index for this query.
- Create new statistics on the Product.ProductNumber column.
- Change the table's primary key to the Product.ProductNumber column.

Correct Answer:

Answer Area

What operator in the query plan for InventoryQuery1 is making the plan inefficient?

- SELECT
- Nested Loops
- **Key Lookup (Clustered)**
- Index Seek (NonClustered)

What change to the database should be implemented to improve this query's plan?

- Create a covering index for this query.
- Create new statistics on the Product.ProductNumber column.
- **Change the table's primary key to the Product.ProductNumber column.**

Box 1: Key Lookup (clustered)

They Key Lookup (clustered) should be less than 50%.

Box 2: Change the table\\'s primary key to the Product.ProductNumber column.

Incorrect: Non-Clustered Index Seek

Non-Clustered Index Seek occurs when Columns part of non-clustered index accessed in query and rows located in the B+ tree.

It is good and ideal to have a Non-Clustered Index Seek.

Action: Evaluate other operators

References:

https://www.sqlshack.com/sql-server-query-execution-plans-beginners-non-clustered-index-operators/

QUESTION 20

You are creating a database that will store usernames and passwords for an application.

You need to recommend a solution to store the passwords in the database.

What should you recommend? More than one answer choice may achieve the goal. Select the BEST answer.

A. One-way encryption

B. Transparent Data Encryption (TDE)

C. Encrypting File System (EFS)

D. Reversible encryption

Correct Answer: B

1.

Transparent Data Encryption (TDE) is a special case of encryption using a symmetric key. TDE encrypts an entire database using that symmetric key called the database encryption key. The database encryption key is protected by other keys or certificates which are protected either by the database master key or by an asymmetric key stored in an EKM module.

2.

SQL Server provides the following mechanisms for encryption: Transact-SQL functions Asymmetric keys Symmetric keys Certificates Transparent Data Encryption

QUESTION 21

You plan to integrate an on-premises Microsoft SQL Server environment with Microsoft Azure.

You need to create the authentication object so that you can connect to Azure. Which Windows PowerShell command or commands should you run?

A. $SecureString = ConvertTo-SecureString “Pa$$w0rd” -AsPlainText -Force New-SqlCredential -Name “AzureCred”

-Identity “AzureStorage” -Secret $SecureString

B. Invoke-Sqlcmd "CREATE EXTERNAL DATA SOURCE MyAzureStorage WITH (LOCATION = `wasbs://Azure@myaccount.blob.core.windows.net/\\', CREDENTIAL = Pa$$w0rd)"

C. Invoke-Sqlcmd "CREATE USER Azure_Active_Directory_principal FROM EXTERNAL PROVIDER WITHOUT LOGIN"

D. New-SqlAzureVaultColumnMasterKeySettings -KeyUrl "https://myvault.vault.contoso.net:443/keys/CMK/4c05f1a41b12488f9cba2ea964b6a700"

Correct Answer: A

The New-SqlCredential cmdlet creates a new SQL Server credential object. A SQL Server credential object is used to store authentication information. The SQL Server credential is required when backing up to or restoring from the Windows Azure storage service, and is used to store the Windows Azure storage account name and access key information.

References: https://docs.microsoft.com/en-us/powershell/module/sqlserver/new-sqlcredential

QUESTION 22

You plan to install a Microsoft SQL Server 2016 instance.

The instance will support a database that has the following requirements:

Store Excel workbooks on the file system.

Access the workbooks through Transact-SQL.

Include the workbooks in database backups.

During installation, you need to ensure that the requirements will be met.

Which feature should you use?

A. Excel Services

B. FILESTREAM

C. SQL Server Integration Services (SSIS)

D. OpenXML

Correct Answer: B

QUESTION 23

You administer a Microsoft SQL Server 2016 server that has SQL Server Integration Services (SSIS) installed.

You plan to deploy new SSIS packages to the server.

The SSIS packages use the Project Deployment Model together with parameters and Integration Services environment variables.

You need to configure the SQL Server environment to support these packages.

What should you do?

A. Create SSIS configuration files for the packages.

B. Create an Integration Services catalog.

C. Install Data Quality Services.

D. Install Master Data services.

Correct Answer: B

Use can use Project Deployment Model for a project, containing packages and parameters, which is deployed to the SSISDB catalog on an instance of SQL Server. References: https://docs.microsoft.com/en-us/sql/integration-services/packages/deploy-integration-services-ssis-projects-and-packages

QUESTION 24

Note: This question is part of a series of questions that use the same scenario. For your convenience, the scenario is repeated in each question. Each question presents a different goal and answer choices, but the text of the scenario is exactly the same in each question in this series.

You maintain a Microsoft SQL Server instance that contains the following databases SalesDb1, SalesDb2, and SalesDb3. Each database has tabled named Products and Sales. The following table shows the configuration of each database.

Option of configuration	SalesDb1	SalesDb2	SalesDb3
Recovery model	Full	Full	Simple
Query Store operation model	Read Write	Off	Off
Auto Update Statistics	True	False	False
Auto Update Statistics asynchronously	False	False	False
Sales data age	< 1 month	1 to 6 months	> 6 months

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The backup strategies for each database are described in the following table.

Database	Strategy	Backup file names
SalesDb1	Full database backups occur daily at 00:00. Log backups occur every hour.	SalesDb1Full_*.bak SalesDb1Log.bak
SalesDb2	Full database backups occur every three months. Differential backups occur every month. Logs are not backed up.	SalesDb2Delta_*.bak SalesDb2Full_*.bak
SalesDb3	Full database backups occur every five years. Differential backups occur every six months.	SalesDb3Delta_*.bak SalesDb3Full_*.bak

Each full or differential backup operation writes into a new file and uses a different sequence number. You observe the following database corruption issues.

Database	Error	Description
SalesDb2	824	Some data pages that store table row data are torn. All backups for **SalesDb2** are lost.
SalesDb3	823	You observe bad checksum issues for data pages that store table row data. All backups are available. No new data has been added to the table since the latest differential backup.

SalesDb3 reports a number of database corruption issues related to error 823 and 824 when reading data pages. You must display the following information about the corrupted pages:

database name

impacted file id

impacted file physical name

impacted page id

event type that identifies the error type

error count

Users report performance issues when they run queries against SalesDb2. You plan to monitor query statistics and execution plans for SalesDb2 by using Query Store. The monitoring strategy must meet the following requirements:

Perform automatic data cleanup when query store disk usage reaches 500 megabyte (MB).

Capture queries based on resource consumption.

Use a stale query threshold value of 60 days.

The query optimizer generates suboptimal execution plans for a number of queries on the Sales table in SalesDb2. You will create a maintenance plan that updates statistics for the table. The plan should only update statistics that were

automatically created and have not been updated for 30 days. The update should be based on all data in the table.

You need to recover SalesDb2 and SalesDb3 while minimizing the data loss.

In the table below, identify the recovery strategy you should use for each database.

NOTE: Make only one selection in each column. Each correct selection is worth one point.

Hot Area:

Correct Answer:

SalesDB2:

Row data are torn (error 824)

How to Fix Torn Pages

Run DBCC checkdb see for inconsistencies

Check your error logs first and then restore your last backups and transaction logs.

All backups are lost.

SalesDB3:

Checksum issues for data pages.

FEPAIR_REBUILD

Performs repairs that have no possibility of data loss. This can include quick repairs, such as repairing missing rows in non-clustered indexes, and more time-consuming repairs, such as rebuilding an index.

References: https://docs.microsoft.com/en-us/sql/relational-databases/backuprestore/manage-the-suspect-pages-table-sql-server

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QUESTION 25

You have a SQL Server 2012 database named DB1.

You have a backup device named Device1.

You discover that the log file for the database is full.

You need to ensure that DB1 can complete transactions.

The solution must not affect the chain of log sequence numbers (LSNs).

Which code segment should you execute?

A. BACKUP LCG DB1 TO Device1 WITH COPY_ONLY

B. BACKUP LOG DB1 TO Device1

C. BACKUP LOG DB1 TO Device1 WITH NCRECCVERY

D. BACKUP LOG D31 TO Device1 WITH TRUNCATE ONLY

Correct Answer: B

http://msdn.microsoft.com/en-us/library/ms186865.aspx http://msdn.microsoft.com/en-us/library/ms179478.aspx http://msdn.microsoft.com/en-us/library/ms190925.aspx

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QUESTION 26

Which feature should you enable and configure so session requests addressed to a specific instance can be allocated different processor resources based on session request properties?

A. Resource Governor

B. Windows System Resource Manager

C. Processor affinity

D. I/O affinity

Correct Answer: A

Resource Governor enables you to allocate session requests to different resources based on the characteristics of the session request properties. References: https://docs.microsoft.com/en-us/sql/relational-databases/resource-governor/resource-governor

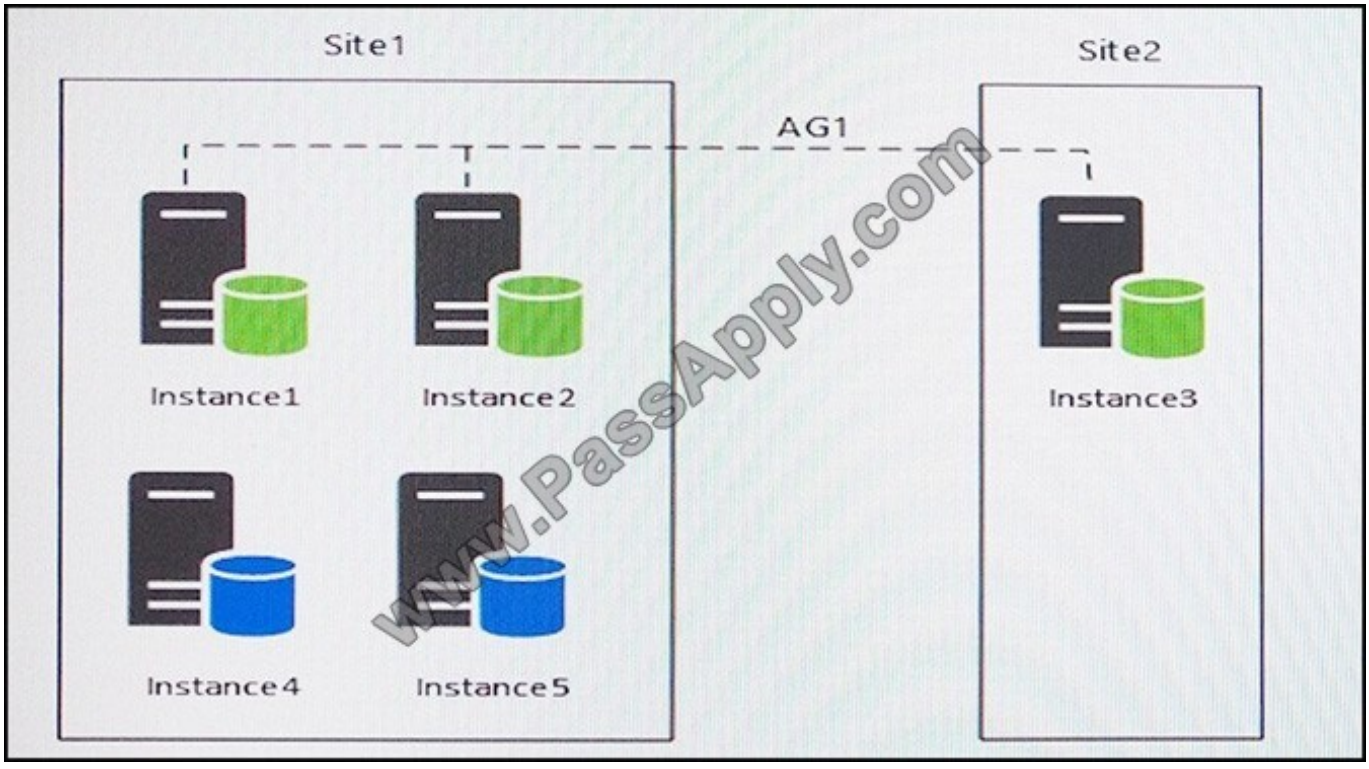
QUESTION 27

Note: This question is part of a series of questions that use the same scenario. For your convenience, the scenario is repeated in each question. Each question presents a different goal and answer choices, but the text of the scenario is

exactly the same in each question in this series.

Start of repeated scenario.

You have five servers that run Microsoft Windows 2012 R2. Each server hosts a Microsoft SQL Server instance. The topology for the environment is shown in the following diagram.



You have an Always On Availability group named AG1. The details for AG1 are shown in the following table.

Instance	Node type
Instance1	Primary
Instance2	Synchronous readable secondary
Instance3	Asynchronous readable secondary

Instance1 experiences heavy read-write traffic. The instance hosts a database named OperationsMain that is four terabytes (TB) in size. The database has multiple data files and filegroups. One of the filegroups is read_only and is half of the

total database size.

Instance4 and Instance5 are not part of AG1. Instance4 is engaged in heavy read-write I/O.

Instance5 hosts a database named StagedExternal. A nightly BULK INSERT process loads data into an empty table that has a rowstore clustered index and two nonclustered rowstore indexes.

You must minimize the growth of the StagedExternal database log file during the BULK INSERT operations and perform point-in-time recovery after the BULK INSERT transaction. Changes made must not interrupt the log backup chain.

You plan to add a new instance named Instance6 to a datacenter that is geographically distant from Site1 and Site2. You must minimize latency between the nodes in AG1.

All databases use the full recovery model. All backups are written to the network location \\SQLBackup\. A separate process copies backups to an offsite location. You should minimize both the time required to restore the databases and the

space required to store backups. The recovery point objective (RPO) for each instance is shown in the following table.

Instance	Recovery point objective
Instance 1	5 minutes
Instance 2	5 minutes
Instance 3	5 minutes
Instance 4	60 minutes
Instance 5	24 hours

Full backups of OperationsMain take longer than six hours to complete. All SQL Server backups use the keyword COMPRESSION.

You plan to deploy the following solutions to the environment. The solutions will access a database named DB1 that is part of AG1.

Reporting system: This solution accesses data inDB1with a login that is mapped to a database user that is a member of the db_datareader role. The user has EXECUTE permissions on the database. Queries make no changes to the data.

The queries must be load balanced over variable read-only replicas.

Operations system: This solution accesses data inDB1with a login that is mapped to a database user that is a member of the db_datareader and db_datawriter roles. The user has EXECUTE permissions on the database. Queries from the

operations system will perform both DDL and DML operations.

The wait statistics monitoring requirements for the instances are described in the following table.

Instance	Description
Instance1	Aggregate wait statistics since the last server restart.
Instance4	Identify the most prominent wait types for all the commands originating from a session, between session connections, or between application pool resets.
Instance5	Identify all the wait types for queries currently running on the server.

End of repeated scenario.

You need to create a backup plan for Instance4.

Which backup plan should you create?

A. Weekly full backups, nightly differential backups, transaction log backups every 30 minutes.

B. Weekly full backups, nightly differential. No transaction log backups are necessary.

C. Weekly full backups, nightly differential backups, transaction log backups every 12 hours.

D. Full backups every 60 minutes, transaction log backups every 30 minutes.

Correct Answer: A

Scenario: Instance4 is engaged in heavy read-write I/O. The Recovery Point Objective of Instance4 is 60 minutes.

QUESTION 28

General Overview

You are the Senior Database Administrator (DBA) for a software development company named Leafield Solutions. The company develops software applications custom designed to meet customer requirements.

Requirements Leafield Solutions has been asked by a customer to develop a web-based Enterprise Resource Planning and Management application. The new application will eventually replace a desktop application that the customer is

currently using. The current application will remain in use while the users are trained to use the new webbased application.

You need to design the SQL Server and database infrastructure for the web-based application.

Databases

You plan to implement databases named Customers, Sales, Products, Current_Inventory, and TempReporting.

The Sales database contains a table named OrderTotals and a table named SalesInfo.

A stored procedure named SPUpdateSalesInfo reads data in the OrderTotals table and modifies data in the SalesInfo table.

The stored procedure then reads data in the OrderTotals table a second time and makes further changes to the information in the SalesInfo table. The Current_Inventory database contains a large table named Inv_Current. The Inv_Current

table has a clustered index for the primary key and a nonclustered index. The primary key column uses the identity property. The data in the Inv_Current table is over 120GB in size. The tables in the Current_Inventory database are accessed

by multiple queries in the Sales database. Another table in the Current_Inventory database contains a self-join with an unlimited number of hierarchies. This table is modified by a stored procedure named SPUpdate2. An external application

named ExternalApp1 will periodically query the Current_Inventory database to generate statistical information. The TempReporting database contains a single table named GenInfo. A stored procedure named SPUPdateGenInfo combines

data from multiple databases and generates millions of rows of data in the GenInfo table.

The GenInfo table is used for reports.

When the information in GenInfo is generated, a reporting process reads data from the Inv_Current table and queries information in the GenInfo table based on that data. The GenInfo table is deleted after the reporting process completes. The

Products database contains tables named ProductNames and ProductTypes.

Current System

The current desktop application uses data stored in a SQL Server 2005 database named DesABCopAppDB. This database will remain online and data from the Current_Inventory database will be copied to it as soon as data is changed in the

Current_Inventory database.

SQL Servers

A new SQL Server 2012 instance will be deployed to host the databases for the new system. The databases will be hosted on a Storage Area Network (SAN) that provides highly available storage.

Design Requirements

Your SQL Server infrastructure and database design must meet the following requirements:

Confidential information in the Current_ Inventory database that is accessed by ExternalApp1 must be securely stored.

Direct access to database tables by developers or applications must be denied.

The account used to generate reports must have restrictions on the hours when it is allowed to make a connection.

Deadlocks must be analyzed with the use of Deadlock Graphs.

In the event of a SQL Server failure, the databases must remain available.

Software licensing and database storage costs must be minimized.

Development effort must be minimized.

The Tempdb databases must be monitored for insufficient free space.

Failed authentication requests must be logged.

Every time a new row is added to the ProductTypes table in the Products database, a user defined function that validates the row must be called before the row is added to the table.

When SPUpdateSalesInfo queries data in the OrderTotals table the first time, the same rows must be returned along with any newly added rows when SPUpdateSalesInfo queries data in the OrderTotals table the second time.

You need to configure a synchronization solution to copy data from the Current_Inventory database the DesABCopAppDB database.

What should you configure?

A. Transactional Replication.

B. Database Mirroring.

C. Snapshot Replication.

D. Incremental Backups

Correct Answer: A

QUESTION 29

You have a database named DB1.

You plan to create a stored procedure that will insert rows into three different tables. Each insert must use the same identifying value for each table, but the value must increase from one invocation of the stored procedure to the next.

Occasionally, the identifying value must be reset to its initial value. You need to design a mechanism to hold the identifying values for the stored procedure to use.

What should you do? More than one answer choice may achieve the goal. Select the BEST answer.

A. Create a sequence object that holds the next value in the sequence. Retrieve the next value by using the stored procedure. Reset the value by using an ALTER SEQUENCE statement as needed.

B. Create a sequence object that holds the next value in the sequence. Retrieve the next value by using the stored procedure. Increment the sequence object to the next value by using an ALTER SEQUENCE statement. Reset the value as needed by using a different ALTER SEQUENCE statement.

C. Create a fourth table that holds the next value in the sequence. At the end each transaction, update the value by using the stored procedure. Reset the value as needed by using an UPDATE statement.

D. Create an identity column in each of the three tables. Use the same seed and the same increment for each table. Insert new rows into the tables by using the stored procedure. Use the DBCC CHECKIDENT command to reset the columns as needed.

Correct Answer: A

-an application can obtain the next sequence number without inserting the row by calling the NEXT VALUE FOR function.

-ALTER SEQUENCE Includes argument:

RESTART [WITH]

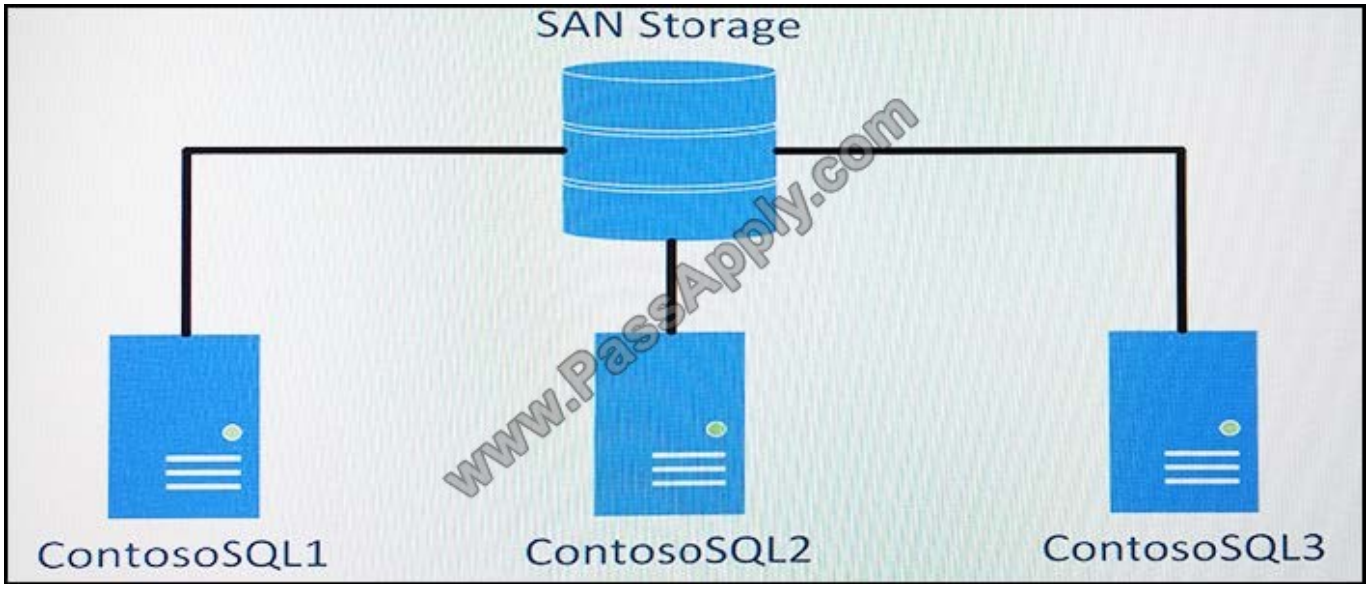
The next value that will be returned by the sequence object. If provided, the RESTART WITH value must be an integer that is less than or equal to the maximum and greater than or equal to the minimum value of the sequence object. If the

WITH value is omitted, the sequence numbering restarts based on the original CREATE SEQUENCE options.

-CREATE SEQUENCE Creates a sequence object and specifies its properties. A sequence is a user-defined schema bound object that generates a sequence of numeric values according to the specification with which the sequence was created. The sequence of numeric values is generated in an ascending or descending order at a defined interval and can be configured to restart (cycle) when exhausted.

QUESTION 30

You are planning the deployment of two new Always On Failover Cluster Instances (FCIs) of Microsoft SQL Server to a single Windows Server Cluster with three nodes. The planned configuration for the cluster is shown in the Server Layout exhibit. (Click the Exhibit button.)



The SAN team has configured storage for the cluster and sent the configuration to you in the email shown in the SAN Team Email exhibit. (Click the Exhibit button.)

Conversation SAN Storage for new SQL Cluster
Subject SAN Storage for new SQL Cluster
DBA Team,
The following LUNs have been presented to the three servers of the new SQL Cluster:
Two 1 TB drives
Two 500 GB drives
Two 75 GB drives

...
Contoso SAN Admins

Each node of the cluster has identical local storage available as shown in the Local Storage exhibit. (Click the Exhibit button.)

All local storage is on SSD.

You need to plan specific configurations for the new cluster.

For each of the following statement, select Yes if the statement is true. Otherwise, select No.

Hot Area:

Answer Area

Statements	Yes	No
The **Tempdb** database for each cluster instance can be placed on the D: drive for the instance.	○	○
One virtual network name for each SQL Server instance must be configured in the cluster.	○	○

Correct Answer:

Answer Area

Statements	Yes	No
The **Tempdb** database for each cluster instance can be placed on the D: drive for the instance.	○	○
One virtual network name for each SQL Server instance must be configured in the cluster.	○	○

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Box 1: Yes

tempdb on local storage. FCIs now support placement of tempdb on local non-shared storage, such as a local solid-state-drive, potentially offloading a significant amount of I/O from a shared SAN.

Prior to SQL Server 2012, FCIs required tempdb to be located on a symmetrical shared storage volume that failed over with other system databases.

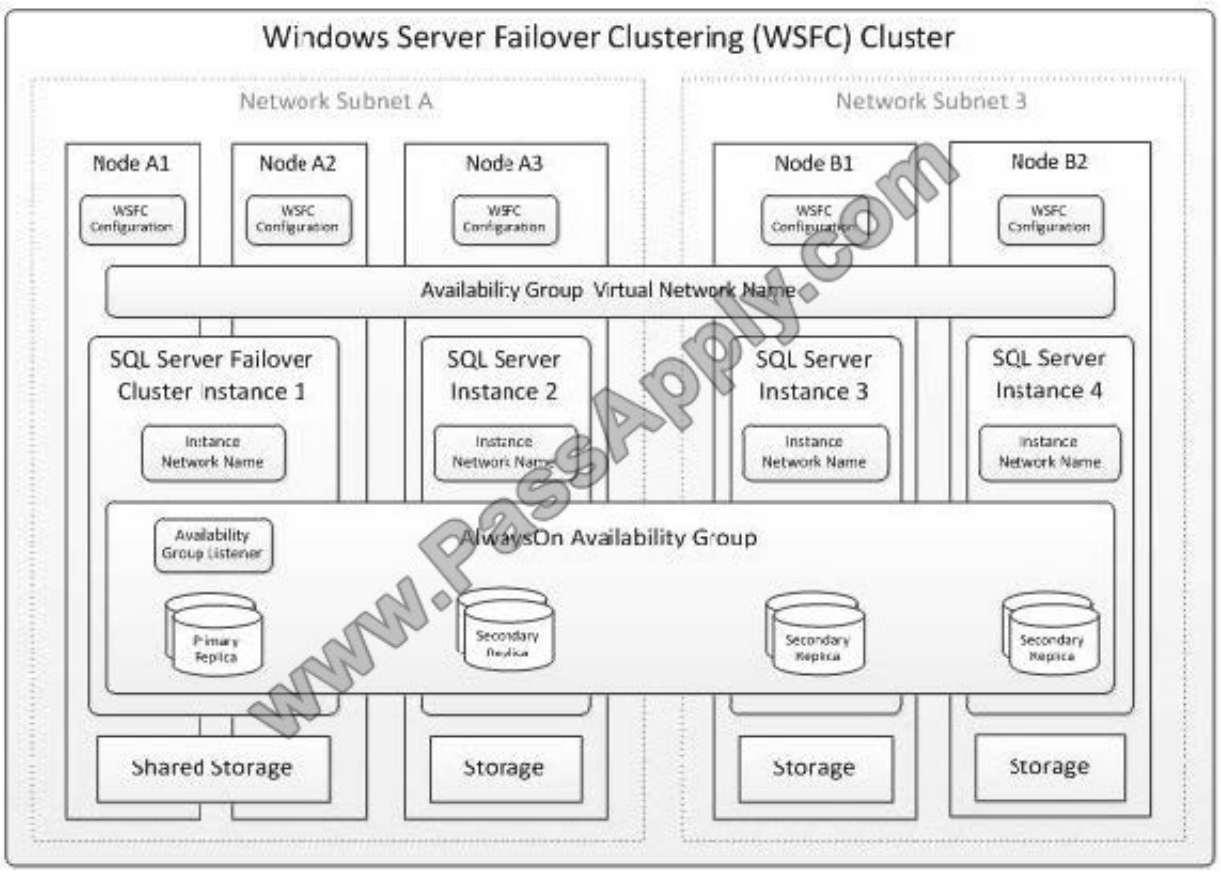
Box 2: No

The VNN is set on the group level, not on the instance level.

Database client applications can connect directly to a SQL Server instance network name, or they may connect to a virtual network name (VNN) that is bound to an availability group listener. The VNN abstracts the WSFC cluster and

availability group topology, logically redirecting connection requests to the appropriate SQL Server instance and database replica.

The logical topology of a representative AlwaysOn solution is illustrated in this diagram:



References: http://download.microsoft.com/download/d/2/0/d20e1c5f-72ea-4505-9f26-fef9550efd44/microsoft%20sql%20server%20alwayson%20solutions%20guide%20for%20high%20availability%20and%20disaster%20recovery.docx

QUESTION 31

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while

others might not have a correct solution.

After you answer a question in this sections, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You have a data warehouse that stored sales data. One fact table has 100 million rows.

You must reduce storage needs for the data warehouse.

You need to implement a solution that uses column-based storage and provides real-time analytics for the operational workload.

Solution: You load the data in a heap table.

Does the solution meet the goal?

A. Yes

B. No

Correct Answer: B

You should use a column-store index.

References: https://docs.microsoft.com/en-us/sql/relational-databases/indexes/columnstore-indexes-overview

QUESTION 32

You deploy a database by using SQL Server 2014.

The database contains a table named Table1.

You need to recommend a solution to track all of the deletions executed on Table1. The solution must minimize the amount of custom code required.

What should you recommend?

A. Change data capture

B. Statistics

C. A trigger

D. Master Data Services

Correct Answer: A

Change data capture is designed to capture insert, update, and delete activity applied to SQL Server tables, and to make the details of the changes available in an easily consumed relational format. The change tables used by change data capture contain columns that mirror the column structure of a tracked source table, along with the metadata needed to understand the changes that have occurred.

QUESTION 33

You have two SQL Server instances named SQLDev and SQLProd that have access to various storage media.

You plan to synchronize SQLDev and SQLProd.

You need to recommend a solution that meets the following requirements: The database schemas must be synchronized from SQLDev to SQLProd. The database on SQLDev must be deployed to SQLProd by using a package. The package must support being deployed to SQL Azure.

What should you recommend? More than one answer choice may achieve the goal. Select the BEST answer.

A. A database snapshot

B. A data-tier application

C. Change data capture

D. SQL Server Integration Services (SSIS)

Correct Answer: B

* SIS supports connections to SQL Database by using the ADO.NET provider. OLEDB is not supported at this time. You can build the SSIS package connecting to SQL Database and create the data flow tasks the same way as you would against a typical on premise SQL Server. http://technet.microsoft.com/en-us/library/ee210546.aspx

QUESTION 34

Note: This question is part of a series of questions that use the same scenario. For your convenience, the scenario is repeated in each question. Each question presents a different goal and answer

choices, but the text of the scenario is exactly the same in each question in this series.

You maintain a Microsoft SQL Server instance that contains the following databases SalesDb1, SalesDb2, and SalesDb3. Each database has tabled named Products and Sales. The following table

shows the configuration of each database.

Option of configuration	SalesDb1	SalesDb2	SalesDb3
Recovery model	Full	Full	Simple
Query Store operation model	Read Write	Off	Off
Auto Update Statistics	True	False	False
Auto Update Statistics asynchronously	False	False	False
Sales data age	< 1 month	1 to 6 months	> 6 months

The backup strategies for each database are described in the following table.

Database	Strategy	Backup file names
SalesDb1	Full database backups occur daily at 00:00. Log backups occur every hour.	SalesDb1Full_*.bak SalesDb1Log.bak
SalesDb2	Full database backups occur every three months. Differential backups occur every month. Logs are not backed up.	SalesDb2Delta_*.bak SalesDb2Full_*.bak
SalesDb3	Full database backups occur every five years. Differential backups occur every six months.	SalesDb3Delta_*.bak SalesDb3Full_*.bak

Each full or differential backup operation writes into a new file and uses a different sequence number. You observe the following database corruption issues.

Database	Error	Description
SalesDb2	824	Some data pages that store table row data are torn. All backups for **SalesDb2** are lost.
SalesDb3	823	You observe bad checksum issues for data pages that store table row data. All backups are available. No new data has been added to the table since the latest differential backup.

SalesDb3 reports a number of database corruption issues related to error 823 and 824 when reading data pages. You must display the following information about the corrupted pages: database name impacted file id impacted file physical name impacted page id event type that identifies the error type error count

Users report performance issues when they run queries against SalesDb2. You plan to monitor query statistics and execution plans for SalesDb2 by using Query Store. The monitoring strategy must

meet the following requirements:

Perform automatic data cleanup when query store disk usage reaches 500 megabyte (MB).

Capture queries based on resource consumption.

Use a stale query threshold value of 60 days.

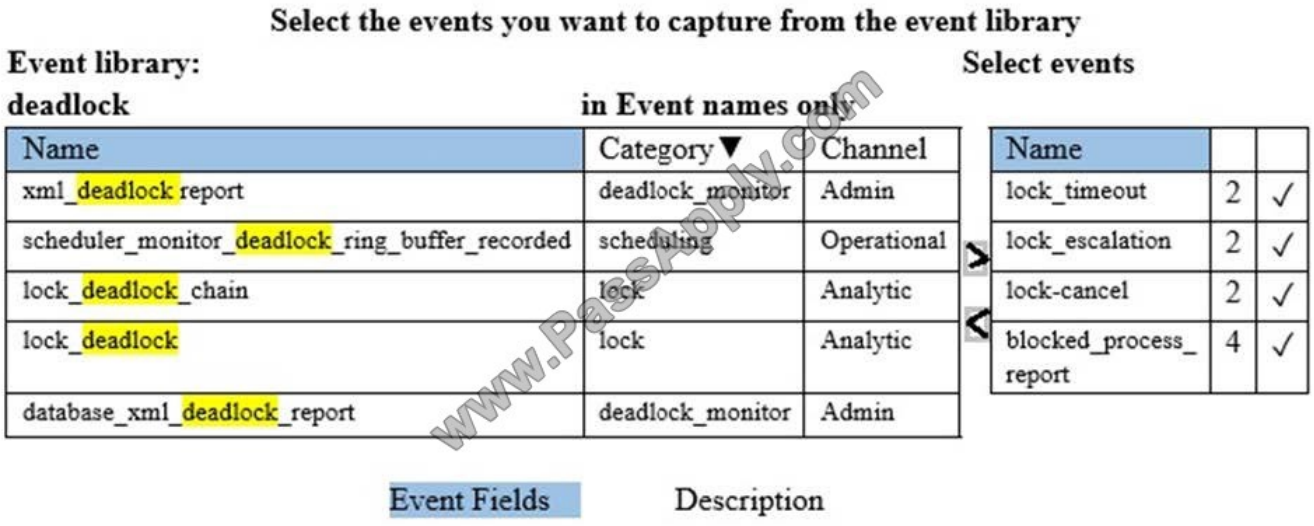
The query optimizer generates suboptimal execution plans for a number of queries on the Sales table in SalesDb2. You will create a maintenance plan that updates statistics for the table. The plan

should only update statistics that were automatically created and have not been updated for 30 days. The update should be based on all data in the table.

You need to write the query the maintenance plan will use to update the statistics.

Which four Transact-SQL segments should you use to develop the solution? To answer, move the appropriate Transact-SQL segments from the list of Transact-SQL segments to the answer area and

arrange them in the correct order.



Select and Place:

Correct Answer:

Transact-SQL segments

```
DECLARE statsCursor CURSOR FOR
SELECT 'UPDATE STATISTICS Sales ' +
StatisticsName + ' WITH SAMPLE 10 PER-
CENT' FROM @staleStatistics
OPEN statsCursor
FETCH NEXT FROM statsCursor INTO @sql
WHILE (@@FETCH_STATUS <> -1)
BEGIN
  EXEC sp_executesql @sql
  FETCH NEXT FROM statsCursor INTO @sql
END
CLOSE statsCursor
DEALLOCATE statsCursor
```

```
SELECT name FROM sys.sysindexes
WHERE id = OBJECT_ID('Sales')
AND STATS_DATE(id, indid) > DATEADD
(DAY, -30,CAST(GETDATE() AS DATE))
```

```
USE master
GO
DECLARE @staleStatistics TABLE (Statis-
ticsName varchar(256))
DECLARE @sql nvarchar(max)
```

Answer Area

```
USE SalesDb2
GO
DECLARE @staleStatistics TABLE (Statis-
ticsName varchar(256))
DECLARE @sql nvarchar(max)
```

```
INSERT INTO @staleStatistics
```

```
SELECT name FROM sys.stats
WHERE auto_created = 1 and object_id
 = OBJECT_ID('Sales')
AND STATS_DATE(object_id, stats_id) <=
DATEADD (DAY, -30,CAST(GETDATE() AS
DATE))
```

```
DECLARE statsCursor CURSOR FOR
SELECT 'UPDATE STATISTICS Sales ' +
StatisticsName + ' WITH FULLSCAN' FROM
@staleStatistics;
OPEN statsCursor
FETCH NEXT FROM statsCursor INTO @sql
WHILE (@@FETCH_STATUS <> -1)
BEGIN
  EXEC sp_executesql @sql
  FETCH NEXT FROM statsCursor INTO @sql
END
CLOSE statsCursor
DEALLOCATE statsCursor
```

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QUESTION 35

You administer a Microsoft SQL Server 2016 database that has multiple tables in the Sales schema.

Some users must be prevented from deleting records in any of the tables in the Sales schema. You need to manage users who are prevented from deleting records in the Sales schema.

You need to achieve this goal by using the minimum amount of administrative effort.

What should you do?

A. Create a custom database role that includes the users. Deny Delete permissions on the Sales schema for the custom database role.

B. Include the Sales schema as an owned schema for the db_denydatawriter role. Add the users to the db_denydatawriter role.

C. Deny Delete permissions on each table in the Sales schema for each user.

D. Create a custom database role that includes the users. Deny Delete permissions on each table in the Sales schema for the custom database role.

Correct Answer: A

QUESTION 36

You plan to deploy three highly available SQL Server environments that will use SQL Server 2014. You identify the following specifications for each environment as shown following table.

Environment	Number of nodes	Windows Server edition	Automatic failover required
ENV1	3	Standard	Yes
ENV2	3	Enterprise	Yes
ENV3	4	Enterprise	Yes

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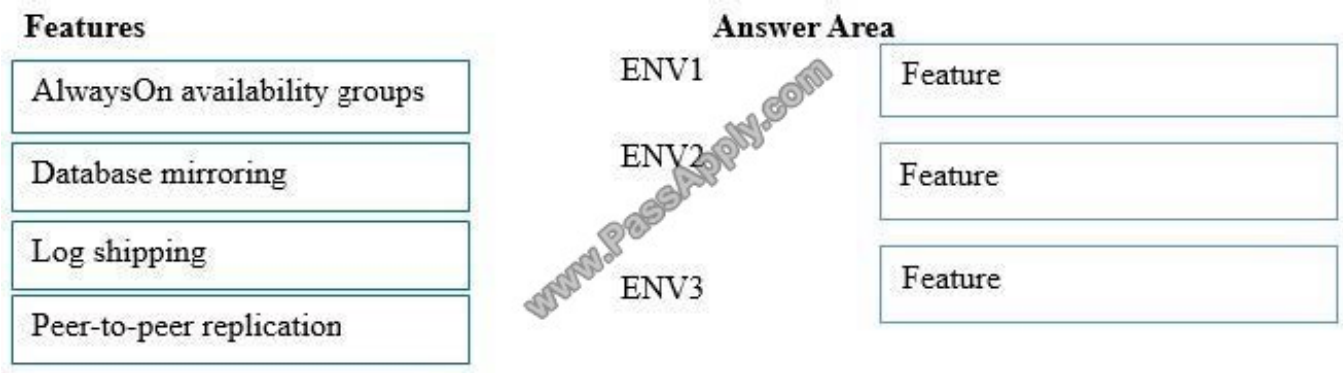
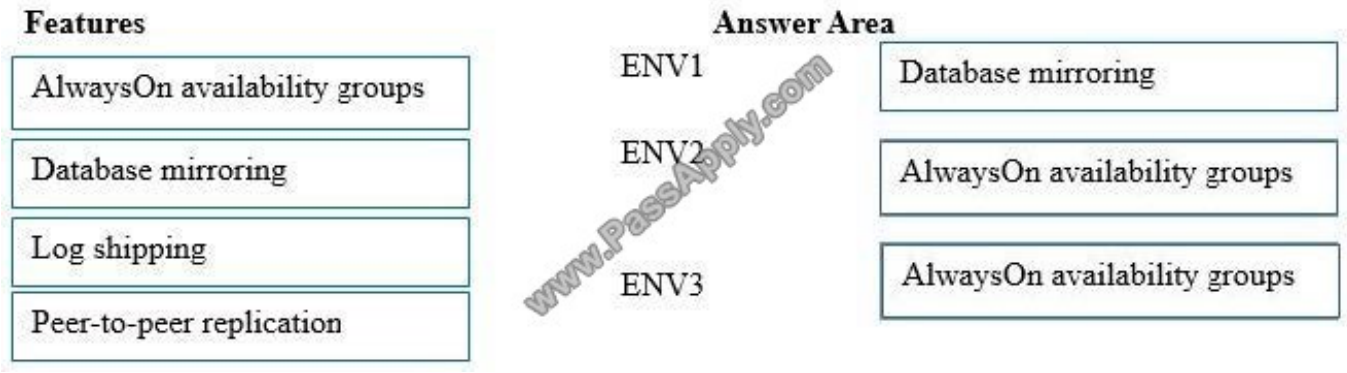
You need to recommend which high-availability feature is required for each environment.

Which features should you identify? To answer, drag the appropriate feature to the correct requirement in the answer area.

Select and Place:



Correct Answer:



ENV1 - Database mirroring; ENV2 - AlwaysOn availability groups; ENV3 - AlwaysOn availability groups

-AlwaysOn availability groups AlwaysOn Availability Groups feature is a high-availability and disaster-recovery solution that provides an enterprise-level alternative to database mirroring. Introduced in SQL Server 2012, AlwaysOn Availability Groups maximizes the availability of a set of user databases for an enterprise. Deploying AlwaysOn Availability Groups requires a Windows Server Failover Clustering (WSFC) cluster.

QUESTION 37

You have a database named DB1.

Users report that a database application that updates the data in DB1 is unresponsive.

You need to identify which process prevents the application from responding.

What should you do?

A. Run DBCC INPUTBUFFER.

B. Query sys.dm_exec_session_wait_stats.

C. Run sp_autostats.

D. Run sp_who.

E. Query sys.dm_db_resource_stats.

Correct Answer: B

Sys.dm_exec_session_wait_stats returns information about all the waits encountered by threads that executed for each session. You can use this view to diagnose performance issues with the SQL Server session and also with specific queries and batches.

References: https://docs.microsoft.com/en-us/sql/relational-databases/system-dynamic-management-views/sys-dm-exec-session-wait-stats-transact-sql

QUESTION 38

You are using dynamic management views to monitor an SQL Server server named SQL1. A database administrator named Dba1 must monitor the health of SQL1.

You need to ensure that Dba1 can access dynamic management views for SQL1.

The solution must use the principle of least privilege. Which permissions should you assign to Dba1?

A. VIEW ANY DEFINITION

B. VIEW SERVER STATE

C. VIEW DEFINITION

D. CONTROL SERVER

Correct Answer: B

To query a dynamic management view or function requires SELECT permission on object and VIEW SERVER STATE or VIEW DATABASE STATE permission. References: https://msdn.microsoft.com/en-us/library/ms188754.aspx

QUESTION 39

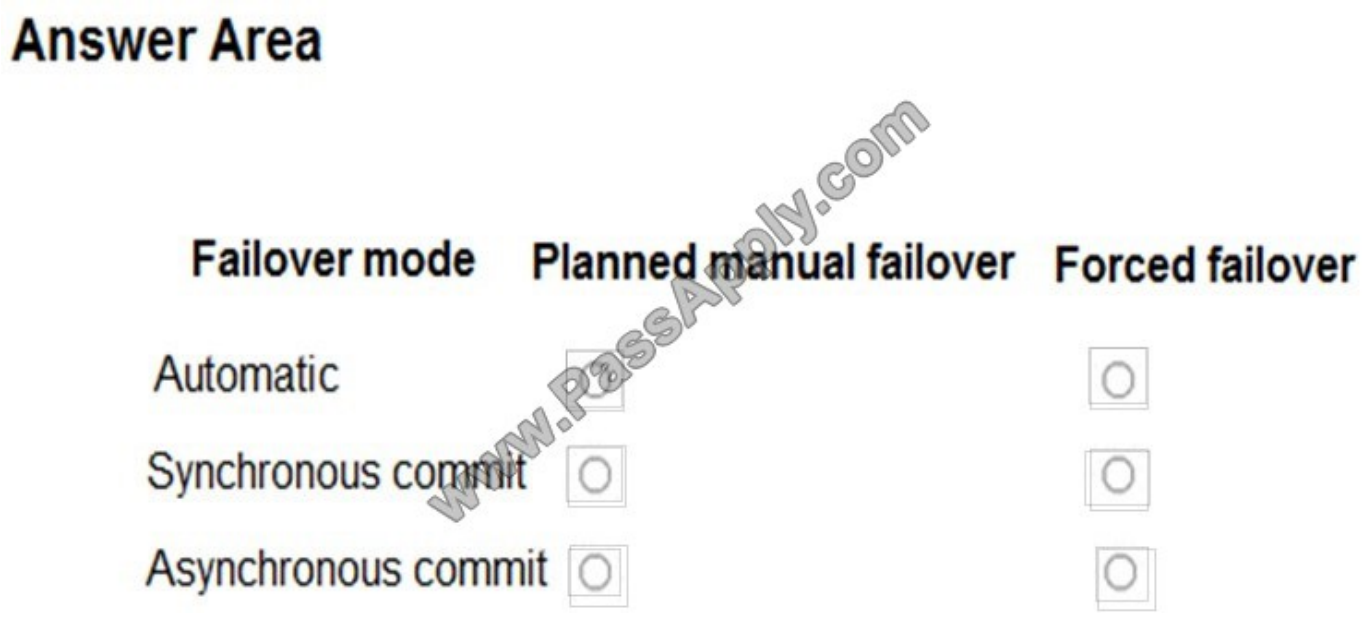
A company has an on-premises Microsoft SOI Server environment and Microsoft Azure SQL Database instance\\'s. The environment hosts several customer databases.

You configure instances for a specific customer as an Always On Availability Group. The primary replica is located on premises the secondary replied is in Azure.

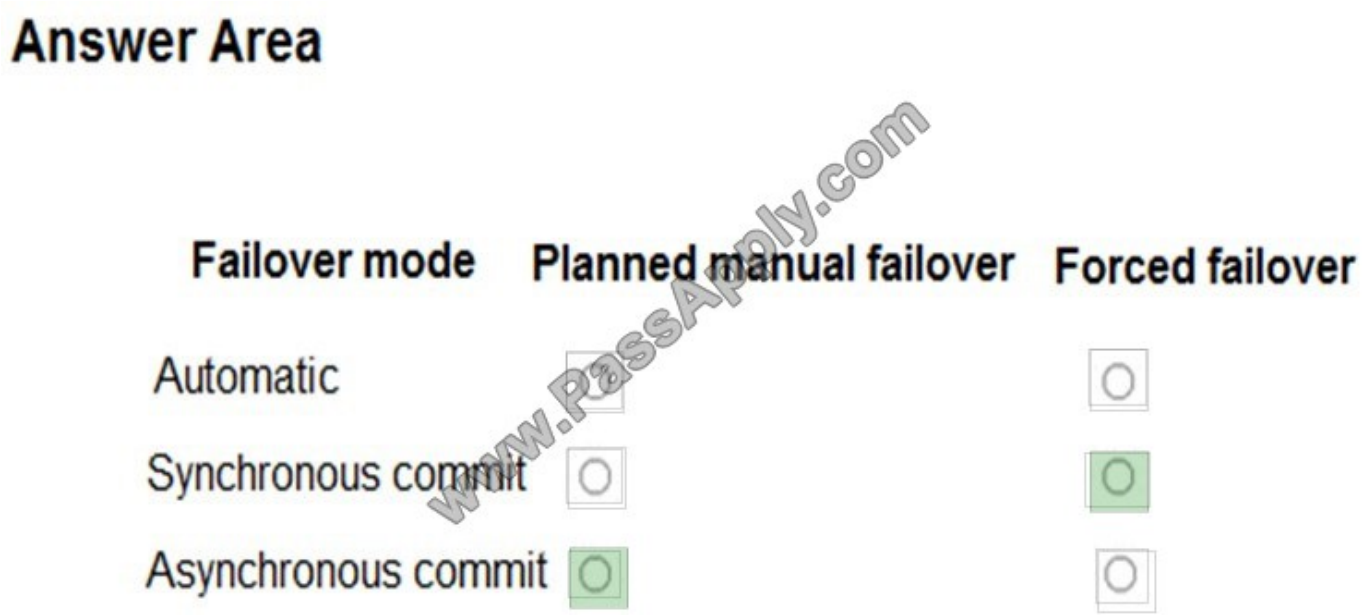
You need to configure the availability group for planned manual failovers and forced failovers.

In the table below, identify the failover mode that you must use for each failover type. NOTE: Make only one selection in each column.

Hot Area:



Correct Answer:



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Column 1: Asynchronous-commit

Asynchronous-commit replicas support only the manual failover mode.

Column 2: Synchronous-commit

Synchronous-commit replicas support two settings—automatic or manual. The "automatic" setting supports both automatic failover and manual failover.

Three forms of failover exist: automatic failover (without data loss), planned manual failover (without data loss), and forced manual failover (with possible data loss), typically called forced failover.

QUESTION 40

A company has an on-premises Microsoft SQL Server environment and Microsoft Azure SQL Database instances. The environments host several customer databases.

You configure an Always On Availability Group for a customer. You must create log reports for the customer that detail when the log is flushed to disk on the primary and secondary replica.

You need to develop a report containing the requested information.

In the table below, identify the log type that you should use for each replica.

NOTE: Make only one selection in each column. Each correct selection is worth one point.

Hot Area:

Log type	Flush on primary	Flush on secondary
Log capture	○	○
Log hardened	○	○
Log receive/Log cache	○	○
Log flush	○	○

Correct Answer:

Log type	Flush on primary	Flush on secondary
Log capture	○	○
Log hardened	○	○
Log receive/Log cache	○	○
Log flush	○	○

Flush on primary: Log flush

Log flush. Log data is generated and flushed to disk on the primary replica in preparation for replication to the secondary replica. It then enters the send queue.

Flush on secondary: Log hardened

The log is flushed on the secondary replica, and then a notification is sent to the primary replica to acknowledge completion of the transaction.

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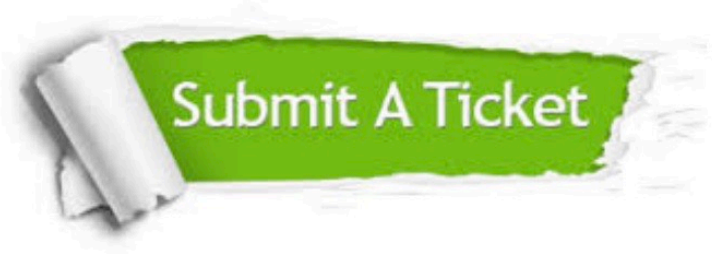

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