Number: AZ-204
Passing Score: 800
Time Limit: 120
File Version: 14.0

Exam Code: AZ-204
Exam Name: Developing Solutions for Microsoft Azure

01 - Develop Azure compute solutions

Case study

This is a case study. Case studies are not timed separately. You can use as much exam time as you would like to complete each case. However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.

To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other questions in this case study.

At the end of this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.

To start the case study

To display the first question in this case study, click the Next button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. When you are ready to answer a question, click the Question button to return to the question.

Current environment

Windows Server 2016 virtual machine

This virtual machine (VM) runs BizTalk Server 2016. The VM runs the following workflows:

Ocean Transport - This workflow gathers and validates container information including container contents and arrival notices at various shipping ports.

Inland Transport - This workflow gathers and validates trucking information including fuel usage, number of stops, and routes.

The VM supports the following REST API calls:

Container API - This API provides container information including weight, contents, and other attributes.

Location API - This API provides location information regarding shipping ports of call and trucking stops.

Shipping REST API - This API provides shipping information for use and display on the shipping website.

Shipping Data

The application uses MongoDB JSON document storage database for all container and transport information.

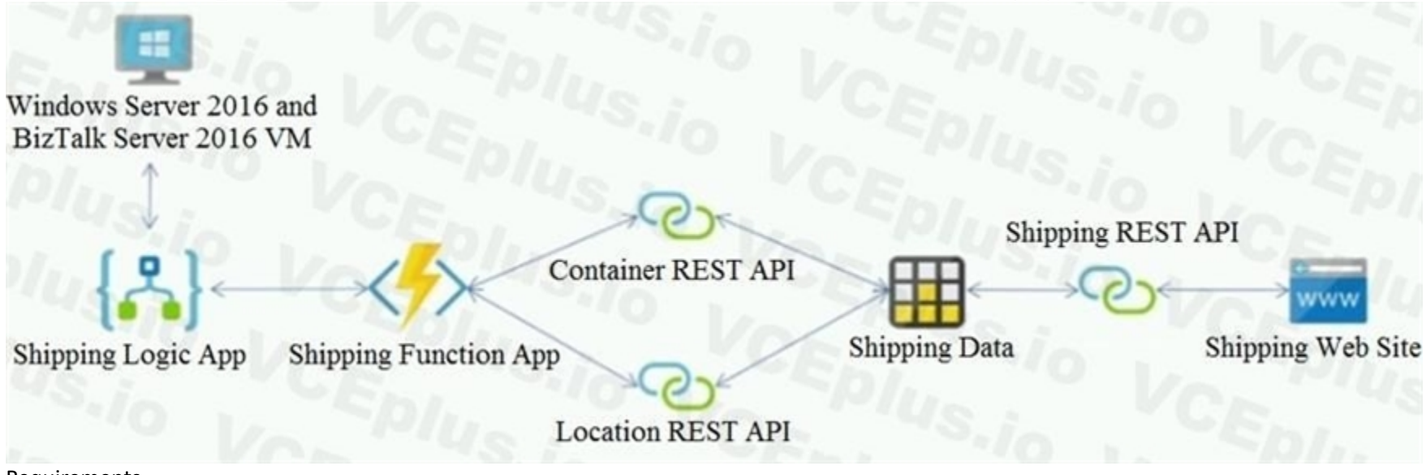
Shipping Web Site

The site displays shipping container tracking information and container contents. The site is located at http://shipping.wideworldimporters.com/

Proposed solution

The on-premises shipping application must be moved to Azure. The VM has been migrated to a new Standard_D16s_v3 Azure VM by using Azure Site Recovery and must remain running in Azure to complete the BizTalk component migrations.

You create a Standard_D16s_v3 Azure VM to host BizTalk Server. The Azure architecture diagram for the proposed solution is shown below:



Requirements

Shipping Logic app

The Shipping Logic app must meet the following requirements:

Support the ocean transport and inland transport workflows by using a Logic App.

Support industry-standard protocol X12 message format for various messages including vessel content details and arrival notices.

Secure resources to the corporate VNet and use dedicated storage resources with a fixed costing model.

Maintain on-premises connectivity to support legacy applications and final BizTalk migrations.
Shipping Function app
Implement secure function endpoints by using app-level security and include Azure Active Directory (Azure AD).
REST APIs
The REST API's that support the solution must meet the following requirements:
Secure resources to the corporate VNet.
Allow deployment to a testing location within Azure while not incurring additional costs.
Automatically scale to double capacity during peak shipping times while not causing application downtime.
Minimize costs when selecting an Azure payment model.
Shipping data
Data migration from on-premises to Azure must minimize costs and downtime.
Shipping website
Use Azure Content Delivery Network (CDN) and ensure maximum performance for dynamic content while minimizing latency and costs.
Issues
Windows Server 2016 VM
The VM shows high network latency, jitter, and high CPU utilization. The VM is critical and has not been backed up in the past. The VM must enable a quick restore from a 7-day snapshot to include in-place restore of disks in case of failure.
Shipping website and REST APIs
The following error message displays while you are testing the website:
Failed to load http://test-shippingapi.wideworldimporters.com/: No 'Access-Control-Allow-Origin' header is present on the requested resource. Origin 'http:// test.wideworldimporters.com/' is therefore not allowed access.

QUESTION 1
HOTSPOT
You need to configure Azure CDN for the Shipping web site.
Which configuration options should you use? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

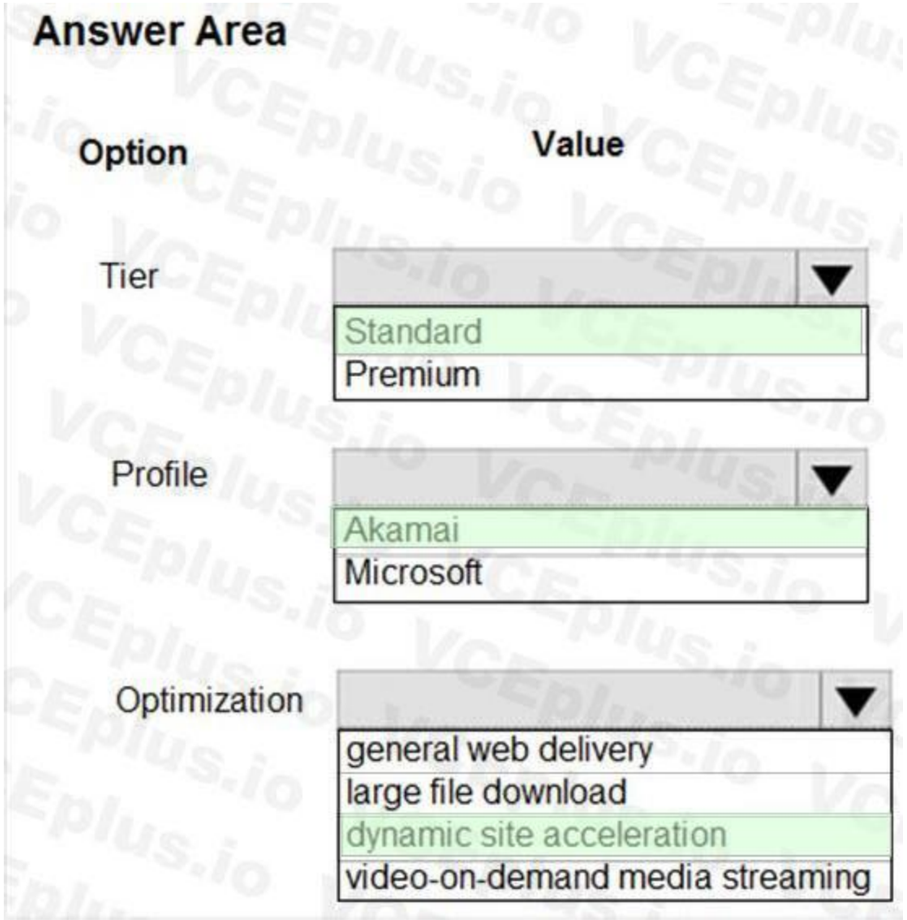
Hot Area:

Answer Area

Option	Value
Tier	Standard Premium
Profile	Akamai Microsoft
Optimization	general web delivery large file download dynamic site acceleration video-on-demand media streaming

Answer Area:

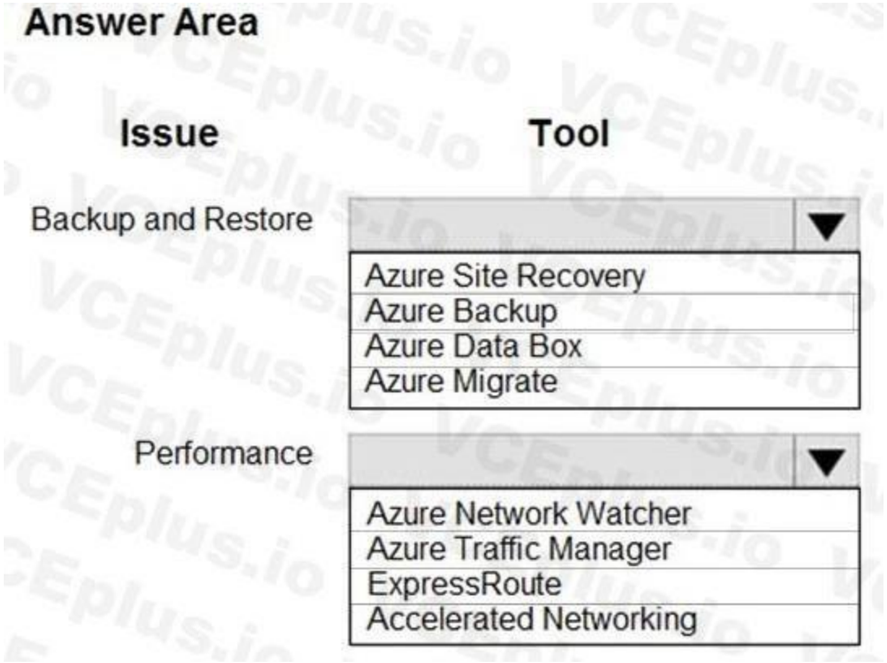
Answer Area



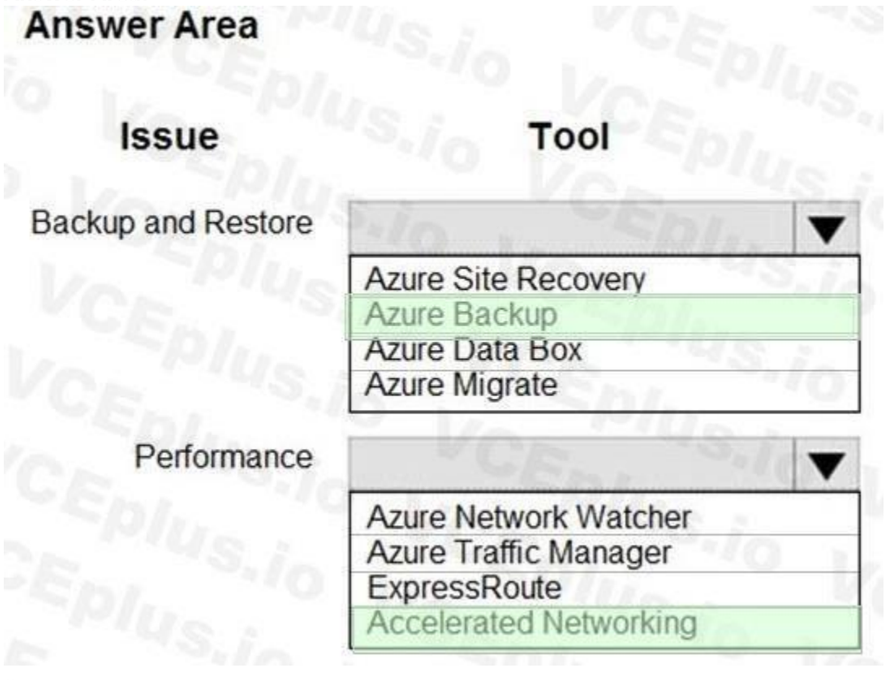
Section:
Explanation:
Scenario: Shipping website
Use Azure Content Delivery Network (CDN) and ensure maximum performance for dynamic content while minimizing latency and costs.
Tier: Standard
Profile: Akamai
Optimization: Dynamic site acceleration Dynamic site acceleration (DSA) is available for Azure CDN Standard from Akamai, Azure CDN Standard from Verizon, and Azure CDN Premium from Verizon profiles.
DSA includes various techniques that benefit the latency and performance of dynamic content. Techniques include route and network optimization, TCP optimization, and more.
You can use this optimization to accelerate a web app that includes numerous responses that aren't cacheable. Examples are search results, checkout transactions, or real-time data. You can continue to use core Azure CDN caching capabilities for static data.
Reference:
https://docs.microsoft.com/en-us/azure/cdn/cdn-optimization-overview

QUESTION 2
HOTSPOT
You need to correct the VM issues.
Which tools should you use? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:



Section:

Explanation:

Box 1: Azure Backup The VM is critical and has not been backed up in the past. The VM must enable a quick restore from a 7-day snapshot to include in-place restore of disks in case of failure.

In-Place restore of disks in IaaS VMs is a feature of Azure Backup.

Performance: Accelerated Networking

Scenario: The VM shows high network latency, jitter, and high CPU utilization.

Box 2: Accelerated networking

The VM shows high network latency, jitter, and high CPU utilization.
Accelerated networking enables single root I/O virtualization (SR-IOV) to a VM, greatly improving its networking performance. This high-performance path bypasses the host from the datapath, reducing latency, jitter, and CPU utilization, for use with the most demanding network workloads on supported VM types.
Reference:
https://azure.microsoft.com/en-us/blog/an-easy-way-to-bring-back-your-azure-vm-with-in-place-restore/

02 - Develop Azure compute solutions

Case study

This is a case study. Case studies are not timed separately. You can use as much exam time as you would like to complete each case. However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.

To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other questions in this case study.

At the end of this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.

To start the case study

To display the first question in this case study, click the Next button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. When you are ready to answer a question, click the Question button to return to the question.

Background

City Power & Light company provides electrical infrastructure monitoring solutions for homes and businesses. The company is migrating solutions to Azure.

Current environment

Architecture overview

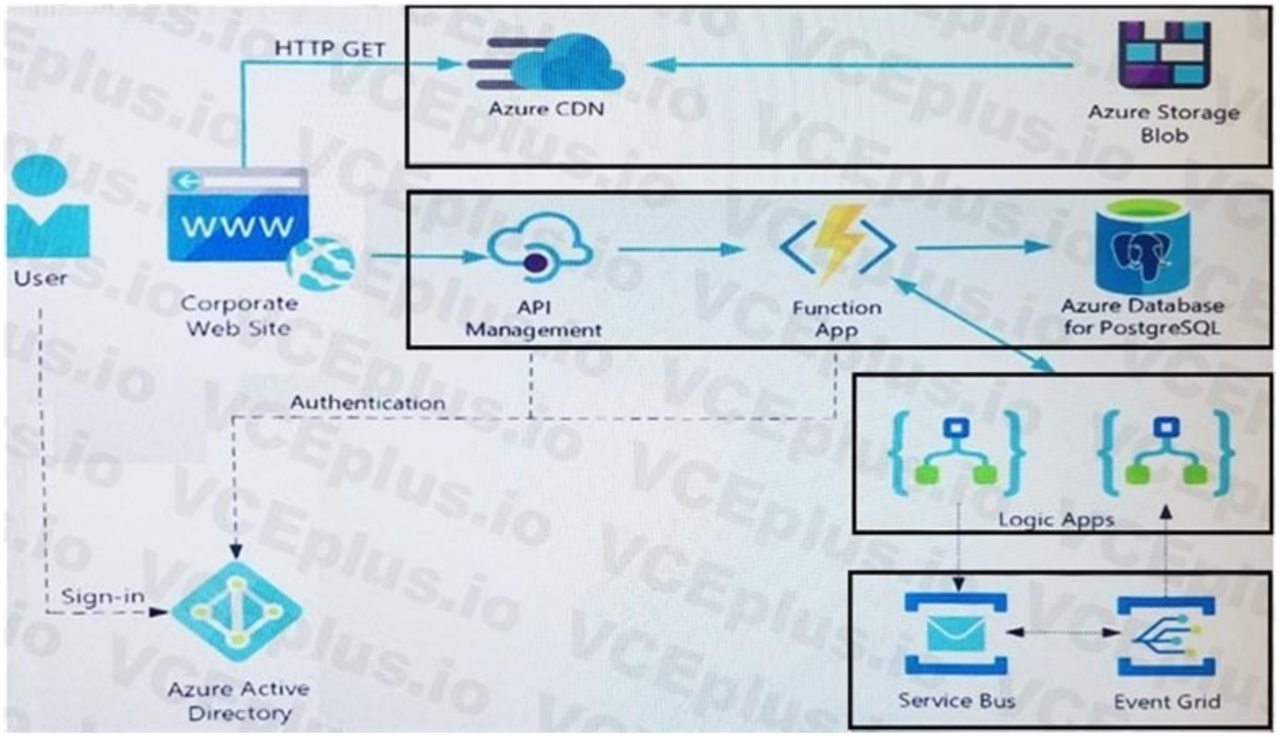
The company has a public website located at http://www.cpandl.com/. The site is a single-page web application that runs in Azure App Service on Linux. The website uses files stored in Azure Storage and cached in Azure Content Delivery Network (CDN) to serve static content.

API Management and Azure Function App functions are used to process and store data in Azure Database for PostgreSQL. API Management is used to broker communications to the Azure Function app functions for Logic app integration. Logic apps are used to orchestrate the data processing while Service Bus and Event Grid handle messaging and events.

The solution uses Application Insights, Azure Monitor, and Azure Key Vault.

Architecture diagram

The company has several applications and services that support their business. The company plans to implement serverless computing where possible. The overall architecture is shown below.



User authentication

The following steps detail the user authentication process:

1. The user selects Sign in in the website.
2. The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.
3. The user signs in.
4. Azure AD redirects the user's session back to the web application. The URL includes an access token.
5. The web application calls an API and includes the access token in the authentication header. The application ID is sent as the audience ('aud') claim in the access token.
6. The back-end API validates the access token.

Requirements

Corporate website

Communications and content must be secured by using SSL.

Communications must use HTTPS.

Data must be replicated to a secondary region and three availability zones.

Data storage costs must be minimized.

Azure Database for PostgreSQL

The database connection string is stored in Azure Key Vault with the following attributes:

Azure Key Vault name: cpandlkeyvault

Secret name: PostgreSQLConn

Id: 80df3e46ffcd4f1cb187f79905e9a1e8

The connection information is updated frequently. The application must always use the latest information to connect to the database.

Azure Service Bus and Azure Event Grid

Azure Event Grid must use Azure Service Bus for queue-based load leveling.

Events in Azure Event Grid must be routed directly to Service Bus queues for use in buffering.

Events from Azure Service Bus and other Azure services must continue to be routed to Azure Event Grid for processing.

Security

All SSL certificates and credentials must be stored in Azure Key Vault.

File access must restrict access by IP, protocol, and Azure AD rights.

All user accounts and processes must receive only those privileges which are essential to perform their intended function.

Compliance

Auditing of the file updates and transfers must be enabled to comply with General Data Protection Regulation (GDPR). The file updates must be read-only, stored in the order in which they occurred, include only create, update, delete, and copy operations, and be retained for compliance reasons.

Issues

Corporate website

While testing the site, the following error message displays:

CryptographicException: The system cannot find the file specified.

Function app

You perform local testing for the RequestUserApproval function. The following error message displays:

'Timeout value of 00:10:00 exceeded by function: RequestUserApproval'

The same error message displays when you test the function in an Azure development environment when you run the following Kusto query:

FunctionAppLogs

| where FunctionName = = "RequestUserApproval"

Logic app

You test the Logic app in a development environment. The following error message displays:

'400 Bad Request'

Troubleshooting of the error shows an HttpTrigger action to call the RequestUserApproval function.

Code

Corporate website

Security.cs:

```
SC01 public class Security
SC02 {
SC03 var bytes = System.IO.File.ReadAllBytes("~/var/ssl/private");
SC04 var cert = new System.Security.Cryptography.X509Certificate2(bytes);
SC05 var certName = cert.FriendlyName;
SC06 }
```

Function app

RequestUserApproval.cs:

```
RA01 public static class RequestUserApproval
RA02 {
RA03 [FunctionName("RequestUserApproval")]
RA04 public static async Task<IActionResult> Run(
RA05 [HttpTrigger(AuthorizationLevel.Function, "get", "post", Route = null)] HttpRequest req.
ILogger log)
RA06 {
RA07   log.LogInformation("RequestUserApproval function processed a request.");
RA08 ...
RA09 return ProcessRequest(req)
RA10   ? (ActionResult)new OkObjectResult($"User approval processed")
RA11   : new BadRequestObjectResult("Failed to process user approval");
RA12 }
RA13 private static bool ProcessRequest(HttpRequest req)
RA14 {
RA15   ...
RA16 }
RA17 }
```

QUESTION 1
You need to correct the RequestUserApproval Function app error.
What should you do?

A. Update line RA13 to use the async keyword and return an HttpRequest object value.
B. Configure the Function app to use an App Service hosting plan. Enable the Always On setting of the hosting plan.
C. Update the function to be stateful by using Durable Functions to process the request payload.
D. Update the functionTimeout property of the host.json project file to 15 minutes.

Correct Answer: C
Section:
Explanation:
Async operation tracking
The HTTP response mentioned previously is designed to help implement long-running HTTP async APIs with Durable Functions. This pattern is sometimes referred to as the polling consumer pattern.
Both the client and server implementations of this pattern are built into the Durable Functions HTTP APIs.
Function app
You perform local testing for the RequestUserApproval function. The following error message displays:
'Timeout value of 00:10:00 exceeded by function: RequestUserApproval'
The same error message displays when you test the function in an Azure development environment when you run the following Kusto query:
FunctionAppLogs
| where FunctionName = = "RequestUserApproval"
References:
https://docs.microsoft.com/en-us/azure/azure-functions/durable/durable-functions-http-features

03 - Develop Azure compute solutions
Case study
This is a case study. Case studies are not timed separately. You can use as much exam time as you would like to complete each case. However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.

To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other questions in this case study.
At the end of this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.
To start the case study
To display the first question in this case study, click the Next button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. When you are ready to answer a question, click the Question button to return to the question.
Background
You are a developer for Proseware, Inc. You are developing an application that applies a set of governance policies for Proseware's internal services, external services, and applications. The application will also provide a shared library for common functionality.
Requirements
Policy service
You develop and deploy a stateful ASP.NET Core 2.1 web application named Policy service to an Azure App Service Web App. The application reacts to events from Azure Event Grid and performs policy actions based on those events.
The application must include the Event Grid Event ID field in all Application Insights telemetry.
Policy service must use Application Insights to automatically scale with the number of policy actions that it is performing.
Policies
Log policy
All Azure App Service Web Apps must write logs to Azure Blob storage. All log files should be saved to a container named logdrop. Logs must remain in the container for 15 days.
Authentication events
Authentication events are used to monitor users signing in and signing out. All authentication events must be processed by Policy service. Sign outs must be processed as quickly as possible.
PolicyLib
You have a shared library named PolicyLib that contains functionality common to all ASP.NET Core web services and applications. The PolicyLib library must:
Exclude non-user actions from Application Insights telemetry.
Provide methods that allow a web service to scale itself.
Ensure that scaling actions do not disrupt application usage.
Other
Anomaly detection service
You have an anomaly detection service that analyzes log information for anomalies. It is implemented as an Azure Machine Learning model. The model is deployed as a web service. If an anomaly is detected, an Azure Function that emails administrators is called by using an HTTP WebHook.
Health monitoring
All web applications and services have health monitoring at the /health service endpoint.
Issues
Policy loss
When you deploy Policy service, policies may not be applied if they were in the process of being applied during the deployment.
Performance issue
When under heavy load, the anomaly detection service undergoes slowdowns and rejects connections.
Notification latency
Users report that anomaly detection emails can sometimes arrive several minutes after an anomaly is detected.
App code
EventGridController.cs
Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

EventGridController.cs

```
EG01 public class EventGridController : Controller
EG02 {
EG03   public static AsyncLocal<string> EventId = new AsyncLocal<string>();
EG04   public IActionResult Process([fromBody] string eventsJson)
EG05   {
EG06     var events = JArray.Parse(eventsJson);
EG07
EG08     foreach (var @event in events)
EG09     {
EG10       EventId.Value = @event["id"].ToString();
EG11       if (@event["topic"].ToString().Contains("providers/Microsoft.Storage"))
EG12       {
EG13         SendToAnomalyDetectionService(@event["data"]["url"].ToString());
EG14       }
EG15
EG16       {
EG17         EnsureLogging(@event["subject"].ToString());
EG18       }
EG19     }
EG20     return null;
EG21   }
EG22   private void EnsureLogging(string resource)
EG23   {
EG24     . . .
EG25   }
EG26   private async Task SendToAnomalyDetectionService(string uri)
EG27   {
EG28     var content = GetLogData(uri);
EG29     var scoreRequest = new
EG30     {
EG31       Inputs = new Dictionary<string, List<Dictionary<string, string>>>()
EG32       {
EG33         {
EG34           "input1",
EG35           new List<Dictionary<string, string>>()
EG36           {
EG37             new Dictionary<string, string>()
EG38             {
EG39               {
EG40                 "logcontent", content
EG41               }
EG42             }
EG43           }
EG44         },
EG45       },
EG46       GlobalParameters = new Dictionary<string, string>() { }
EG47     };
EG48     var result = await (new HttpClient()).PostAsJsonAsync("...", scoreRequest);
EG49     var rawModelResult = await result.Content.ReadAsStringAsync();
EG50     var modelResult = JObject.Parse(rawModelResult);
EG51     if (modelResult["notify"].HasValues)
EG52     {
EG53       . . .
EG54     }
```

LoginEvent.cs
Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

```
LoginEvent.cs
LE01 public class LoginEvent
LE02 {
LE03
LE04   public string subject { get; set; }
LE05   public DateTime eventTime { get; set; }
LE06   public Dictionary<string, string> data { get; set; }
LE07   public string Serialize()
LE08   {
LE09     return JsonConvert.SerializeObject(this);
LE10   }
LE11 }
```

QUESTION 1
You need to resolve a notification latency issue.
Which two actions should you perform? Each correct answer presents part of the solution.
NOTE: Each correct selection is worth one point.

A. Set Always On to true.
B. Ensure that the Azure Function is using an App Service plan.
C. Set Always On to false.
D. Ensure that the Azure Function is set to use a consumption plan.

Correct Answer: A, B
Section:
Explanation:
Azure Functions can run on either a Consumption Plan or a dedicated App Service Plan. If you run in a dedicated mode, you need to turn on the Always On setting for your Function App to run properly. The Function runtime will go idle after a few minutes of inactivity, so only HTTP triggers will actually "wake up" your functions. This is similar to how WebJobs must have Always On enabled.
Scenario: Notification latency: Users report that anomaly detection emails can sometimes arrive several minutes after an anomaly is detected.
Anomaly detection service: You have an anomaly detection service that analyzes log information for anomalies. It is implemented as an Azure Machine Learning model. The model is deployed as a web service.
If an anomaly is detected, an Azure Function that emails administrators is called by using an HTTP WebHook.
Reference:
https://github.com/Azure/Azure-Functions/wiki/Enable-Always-On-when-running-on-dedicated-App-Service-Plan

04 - Develop Azure compute solutions
Case study
This is a case study. Case studies are not timed separately. You can use as much exam time as you would like to complete each case. However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.
To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other questions in this case study.
At the end of this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.
To start the case study
To display the first question in this case study, click the Next button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. When you are ready to answer a question, click the Question button to return to the question.
Background

Overview
You are a developer for Contoso, Ltd. The company has a social networking website that is developed as a Single Page Application (SPA). The main web application for the social networking website loads user uploaded content from blob storage.
You are developing a solution to monitor uploaded data for inappropriate content. The following process occurs when users upload content by using the SPA:
Messages are sent to ContentUploadService.
Content is processed by ContentAnalysisService.
After processing is complete, the content is posted to the social network or a rejection message is posted in its place.
The ContentAnalysisService is deployed with Azure Container Instances from a private Azure Container Registry named contosoimages.
The solution will use eight CPU cores.
Azure Active Directory
Contoso, Ltd. uses Azure Active Directory (Azure AD) for both internal and guest accounts.
Requirements
ContentAnalysisService
The company's data science group built ContentAnalysisService which accepts user generated content as a string and returns a probable value for inappropriate content. Any values over a specific threshold must be reviewed by an employee of Contoso, Ltd.
You must create an Azure Function named CheckUserContent to perform the content checks.
Costs
You must minimize costs for all Azure services.
Manual review
To review content, the user must authenticate to the website portion of the ContentAnalysisService using their Azure AD credentials. The website is built using React and all pages and API endpoints require authentication. In order to review content a user must be part of a ContentReviewer role. All completed reviews must include the reviewer's email address for auditing purposes.
High availability
All services must run in multiple regions. The failure of any service in a region must not impact overall application availability.
Monitoring
An alert must be raised if the ContentUploadService uses more than 80 percent of available CPU cores.
Security
You have the following security requirements:
Any web service accessible over the Internet must be protected from cross site scripting attacks.
All websites and services must use SSL from a valid root certificate authority.
Azure Storage access keys must only be stored in memory and must be available only to the service.
All Internal services must only be accessible from internal Virtual Networks (VNets).
All parts of the system must support inbound and outbound traffic restrictions.
All service calls must be authenticated by using Azure AD.
User agreements
When a user submits content, they must agree to a user agreement. The agreement allows employees of Contoso, Ltd. to review content, store cookies on user devices, and track user's IP addresses.
Information regarding agreements is used by multiple divisions within Contoso, Ltd.
User responses must not be lost and must be available to all parties regardless of individual service uptime. The volume of agreements is expected to be in the millions per hour.
Validation testing
When a new version of the ContentAnalysisService is available the previous seven days of content must be processed with the new version to verify that the new version does not significantly deviate from the old version.
Issues
Users of the ContentUploadService report that they occasionally see HTTP 502 responses on specific pages.
Code
ContentUploadService

```
apiVersion: '2018-10-01'
type: Microsoft.ContainerInstance/containerGroups
location: westus
name: contentUploadService
properties:
    containers:
    - name: service
        properties:
        image: contoso/contentUploadService:latest
        ports:
        -  port: 80
           protocol: TCP
        resources:
          requests:
            cpu: 1.0
            memoryInGB: 1.5

ipAddress:
    ip: 10.23.121.112
    ports:
      - port: 80
        protocol: TCP


networkProfile:

id: /subscriptions/98...19/resourceGroups/container/providers/Microsoft.Network/networkProfiles/subnet
```

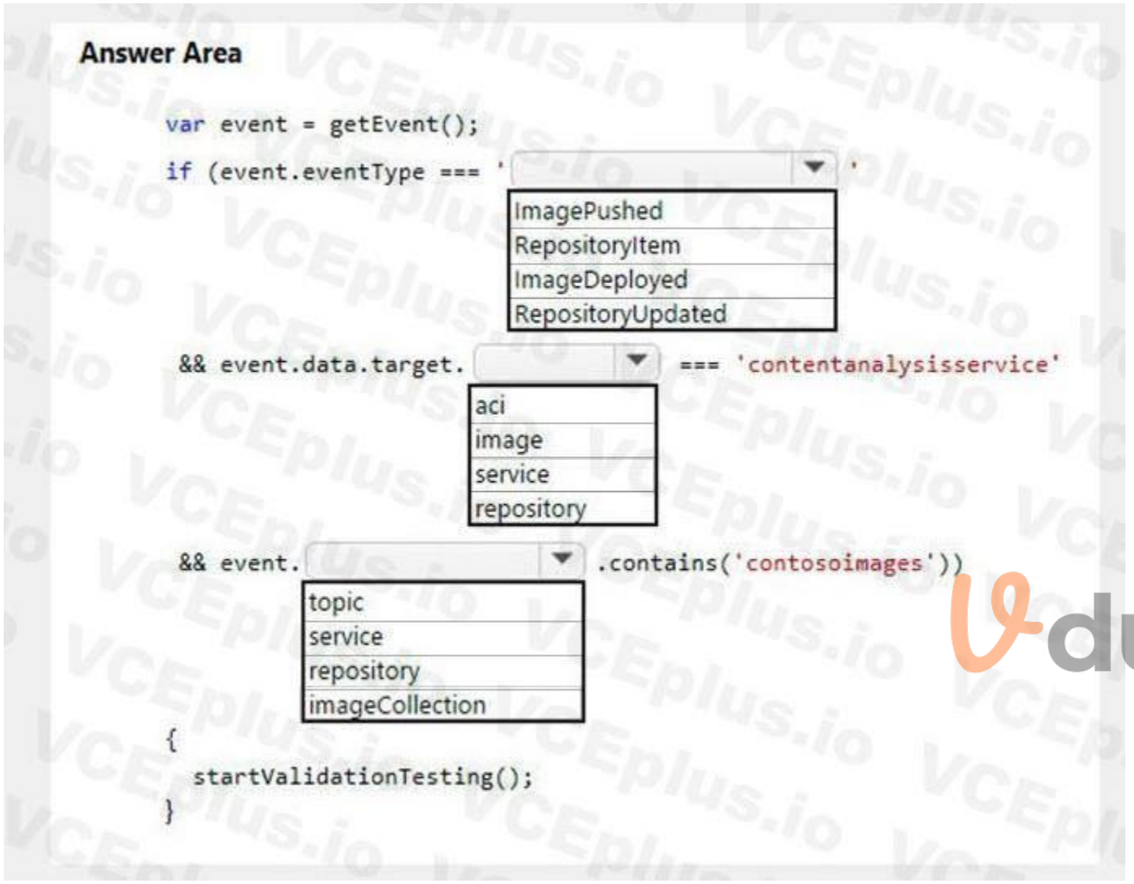
ApplicationManifest

```
{
    "id" : "2b079f03-9b06-2d44-98bb-e9182901fcb6",
    "appId" : "7118a7f0-b5c2-4c9d-833c-3d711396fe65",

    "createdDateTime" : "2019-12-24T06:01:44Z",
    "logoUrl" : null,
    "logoutUrl" : null,
    "name" : "ContentAnalysisService",


    "orgRestrictions" : [],
    "parentalControlSettings" : {
     "countriesBlockedForMinors" : [],
      "legalAgeGroupRule" : "Allow"
    },
    "passwordCredentials" : []
}
```

QUESTION 1
HOTSPOT

You need to ensure that validation testing is triggered per the requirements.
How should you complete the code segment? To answer, select the appropriate values in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:

Answer Area

```
var event = getEvent();
if (event.eventType === '                    '
                          ImagePushed
                          RepositoryItem
                          ImageDeployed
                          RepositoryUpdated
    && event.data.target.                    === 'contentanalysisservice'
                          aci
                          image
                          service
                          repository
    && event.                    .contains('contosoimages'))
                topic
                service
                repository
                imageCollection
{
    startValidationTesting();
}
```

Section:
Explanation:
Box 1: RepositoryUpdated
When a new version of the ContentAnalysisService is available the previous seven days of content must be processed with the new version to verify that the new version does not significantly deviate from the old version.
Box 2: service
Box 3: imageCollection
Reference:
https://docs.microsoft.com/en-us/azure/devops/notifications/oob-supported-event-types

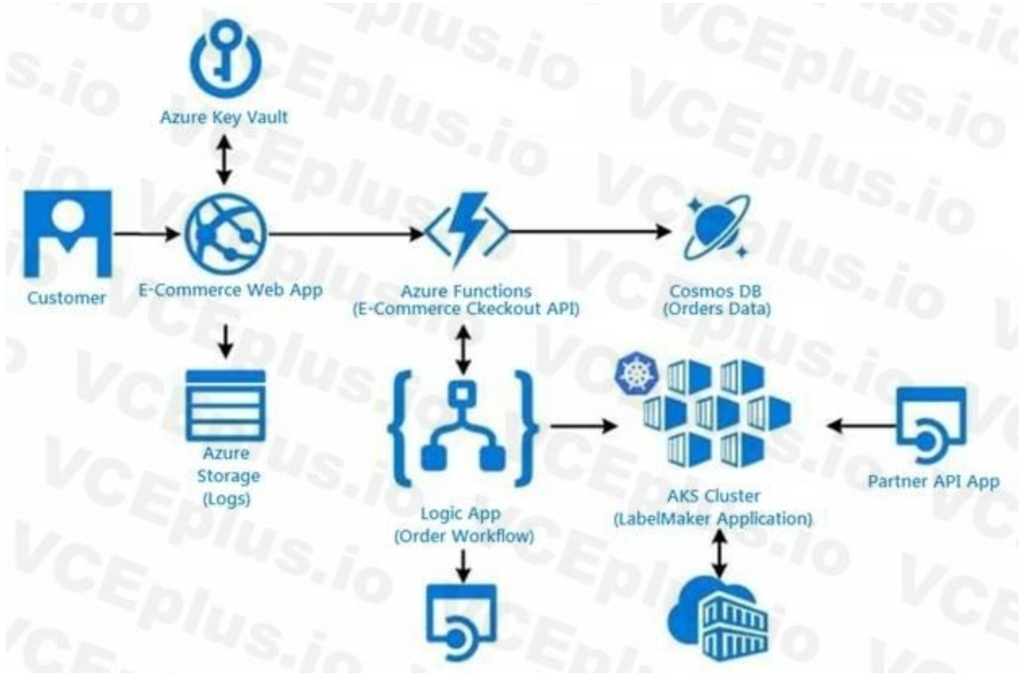
QUESTION 2
You need to deploy the CheckUserContent Azure Function. The solution must meet the security and cost requirements.
Which hosting model should you use?

A. Premium plan
B. App Service plan
C. Consumption plan

Correct Answer: B
Section:
Explanation:
Scenario:
You must minimize costs for all Azure services.

All Internal services must only be accessible from internal Virtual Networks (VNets).
Best for long-running scenarios where Durable Functions can't be used. Consider an App Service plan in the following situations:
You have existing, underutilized VMs that are already running other App Service instances.
You want to provide a custom image on which to run your functions.
Predictive scaling and costs are required.
Note: When you create a function app in Azure, you must choose a hosting plan for your app. There are three basic hosting plans available for Azure Functions: Consumption plan, Premium plan, and Dedicated (App Service) plan.
Incorrect Answers:
A: A Premium plan would be more costly.
C: Need the VNET functionality.
Reference:
https://docs.microsoft.com/en-us/azure/azure-functions/functions-scale

05 - Develop Azure compute solutions
Case study
This is a case study. Case studies are not timed separately. You can use as much exam time as you would like to complete each case. However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.
To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other questions in this case study.
At the end of this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.
To start the case study
To display the first question in this case study, click the Next button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. When you are ready to answer a question, click the Question button to return to the question.
LabelMaker app
Coho Winery produces, bottles, and distributes a variety of wines globally. You are a developer implementing highly scalable and resilient applications to support online order processing by using Azure solutions.
Coho Winery has a LabelMaker application that prints labels for wine bottles. The application sends data to several printers. The application consists of five modules that run independently on virtual machines (VMs). Coho Winery plans to move the application to Azure and continue to support label creation.
External partners send data to the LabelMaker application to include artwork and text for custom label designs.
Requirements. Data
You identify the following requirements for data management and manipulation:
Order data is stored as nonrelational JSON and must be queried using SQL.
Changes to the Order data must reflect immediately across all partitions. All reads to the Order data must fetch the most recent writes.
Requirements. Security
You have the following security requirements:
Users of Coho Winery applications must be able to provide access to documents, resources, and applications to external partners.
External partners must use their own credentials and authenticate with their organization's identity management solution.
External partner logins must be audited monthly for application use by a user account administrator to maintain company compliance.
Storage of e-commerce application settings must be maintained in Azure Key Vault.
E-commerce application sign-ins must be secured by using Azure App Service authentication and Azure Active Directory (AAD).
Conditional access policies must be applied at the application level to protect company content.
The LabelMaker application must be secured by using an AAD account that has full access to all namespaces of the Azure Kubernetes Service (AKS) cluster.
Requirements. LabelMaker app
Azure Monitor Container Health must be used to monitor the performance of workloads that are deployed to Kubernetes environments and hosted on Azure Kubernetes Service (AKS).
You must use Azure Container Registry to publish images that support the AKS deployment.
Architecture



Issues

Calls to the Printer API App fail periodically due to printer communication timeouts.

Printer communication timeouts occur after 10 seconds. The label printer must only receive up to 5 attempts within one minute.

The order workflow fails to run upon initial deployment to Azure.

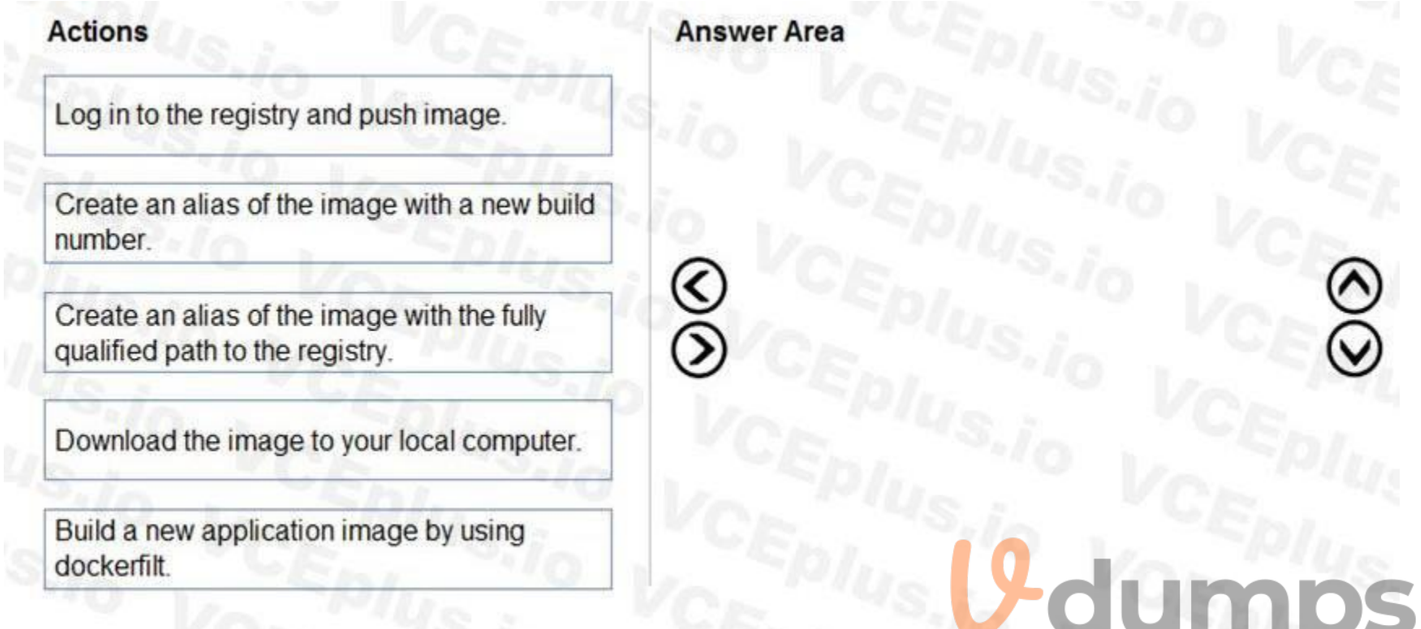
Order.json

```
{
  “id” : 1,
  “customers” : [
  {
     “familyName” : “Doe”,
     “givenName” : “John”,
     “customerid” : 5
   }
  ],
  “line_items” : [
  {
     “fulfillable_quantity” : 1,
     “id” : 6,
     “price” : “199.99” ,
     “product_id” : 7513594,
     “quantity”: 1,
     “requires_shipping” : true ,
     “sku” : “SFC-342-N” ,
     “title”: “Surface Go” ,
     “vendor” : “Microsoft” ,
     “name” : “Surface Go – 8GB” ,
     “taxable” : true ,
     “tax_lines” : [
      {
        “title” : “State Tax” ,
        “price” : “3.98” ,
        “rate” : 0.06
       }
      ],
     “total_discount” : “5.00” ,
     “discount_allocations” : [
      {
        “amount” : “5.00” ,
        “discount_application_index” : 2
        }
     ]
   }
  ],
  “address” : {
  “state” : “NY” ,
  “state”: “Manhattan” ,
  “city” : “NY”
  }
}
```

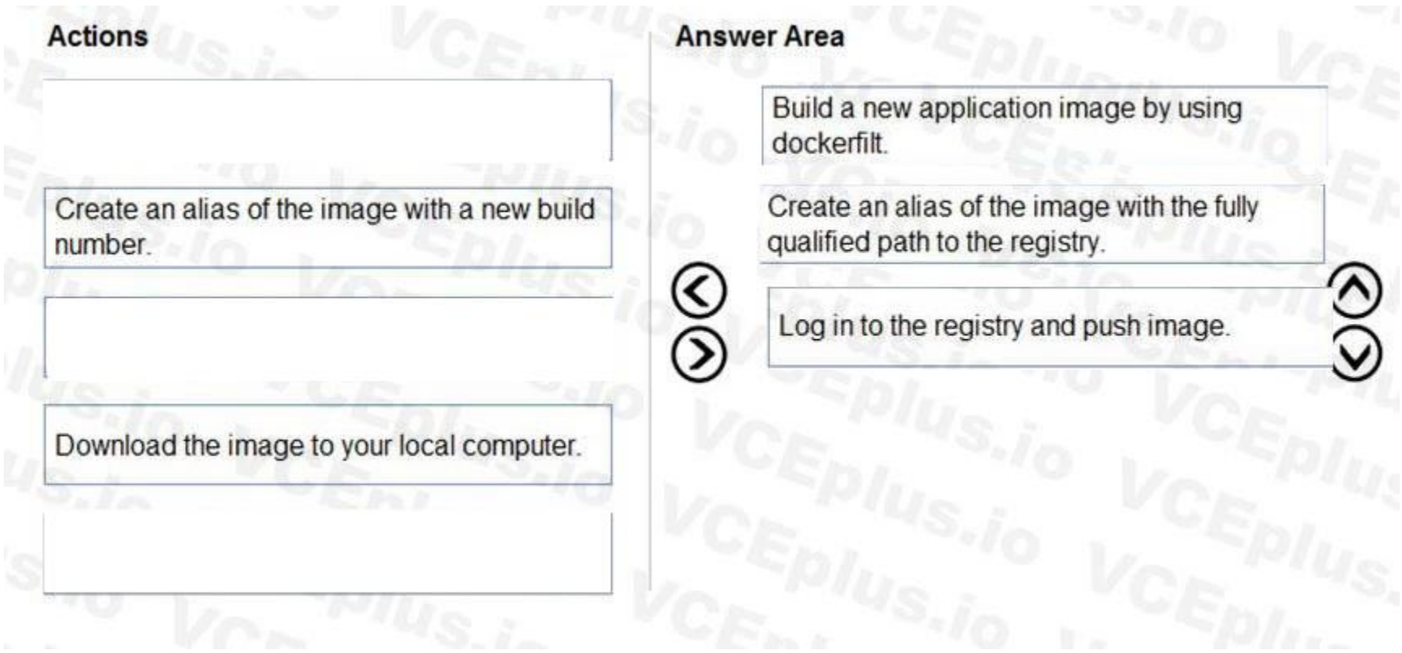
Relevant portions of the app files are shown below. Line numbers are included for reference only.
This JSON file contains a representation of the data for an order that includes a single item.
Order.json

QUESTION 1
DRAG DROP
You need to deploy a new version of the LabelMaker application to ACR.
Which three actions should you perform in sequence? To answer, 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:



Section:

Explanation:
Step 1: Build a new application image by using dockerfile
Step 2: Create an alias if the image with the fully qualified path to the registry Before you can push the image to a private registry, you've to ensure a proper image name. This can be achieved using the docker tag command. For demonstration purpose, we'll use Docker's hello world image, rename it and push it to
ACR.
# pulls hello-world from the public docker hub
$ docker pull hello-world
# tag the image in order to be able to push it to a private registry
$ docker tag hello-word <REGISTRY_NAME>/hello-world
# push the image
$ docker push <REGISTRY_NAME>/hello-world
Step 3: Log in to the registry and push image In order to push images to the newly created ACR instance, you need to login to ACR form the Docker CLI. Once logged in, you can push any existing docker image to your ACR instance.
Scenario:
Coho Winery plans to move the application to Azure and continue to support label creation.
LabelMaker app
Azure Monitor Container Health must be used to monitor the performance of workloads that are deployed to Kubernetes environments and hosted on Azure Kubernetes Service (AKS).
You must use Azure Container Registry to publish images that support the AKS deployment.
Reference:
https://thorsten-hans.com/how-to-use-a-private-azure-container-registry-with-kubernetes-9b86e67b93b6
https://docs.microsoft.com/en-us/azure/container-registry/container-registry-tutorial-quick-task

QUESTION 2
You need to access data from the user claim object in the e-commerce web app.
What should you do first?

A. Write custom code to make a Microsoft Graph API call from the e-commerce web app.
B. Assign the Contributor RBAC role to the e-commerce web app by using the Resource Manager create role assignment API.
C. Update the e-commerce web app to read the HTTP request header values.
D. Using the Azure CLI, enable Cross-origin resource sharing (CORS) from the e-commerce checkout API to the e-commerce web app.

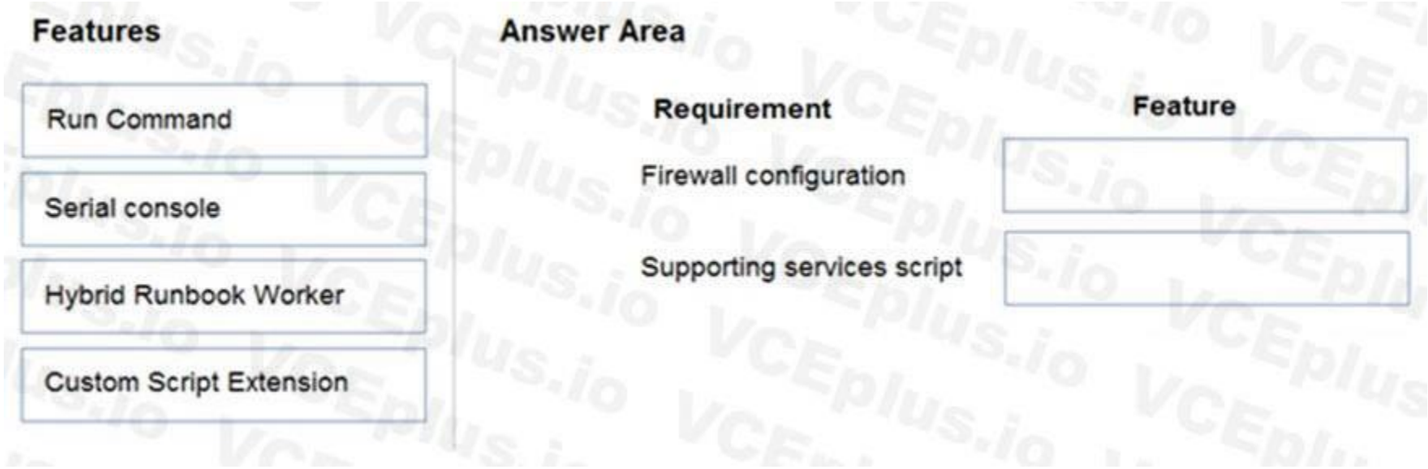
Correct Answer: C
Section:
Explanation:
Methods to Get User Identity and Claims in a .NET Azure Functions App include:
ClaimsPrincipal from the Request Context
The ClaimsPrincipal object is also available as part of the request context and can be extracted from the HttpRequest.HttpContext.
User Claims from the Request Headers.
App Service passes user claims to the app by using special request headers.
Reference:
https://levelup.gitconnected.com/four-alternative-methods-to-get-user-identity-and-claims-in-a-net-azure-functions-app-df98c40424bb

06 - Develop Azure compute solutions

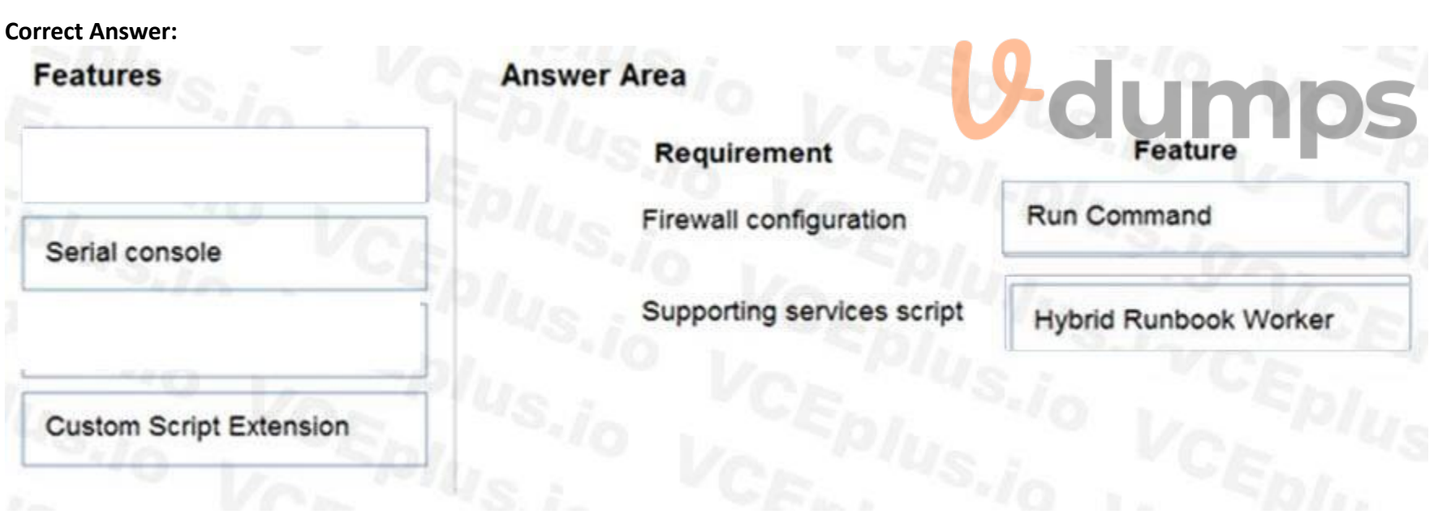
QUESTION 1
DRAG DROP
You are preparing to deploy an Azure virtual machine (VM)-based application.
The VMs that run the application have the following requirements:
When a VM is provisioned the firewall must be automatically configured before it can access Azure resources.

Supporting services must be installed by using an Azure PowerShell script that is stored in Azure Storage.
You need to ensure that the requirements are met.
Which features should you use? To answer, drag the appropriate features to the correct requirements. Each feature 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.
NOTE: Each correct selection is worth one point.

Select and Place:



Correct Answer:

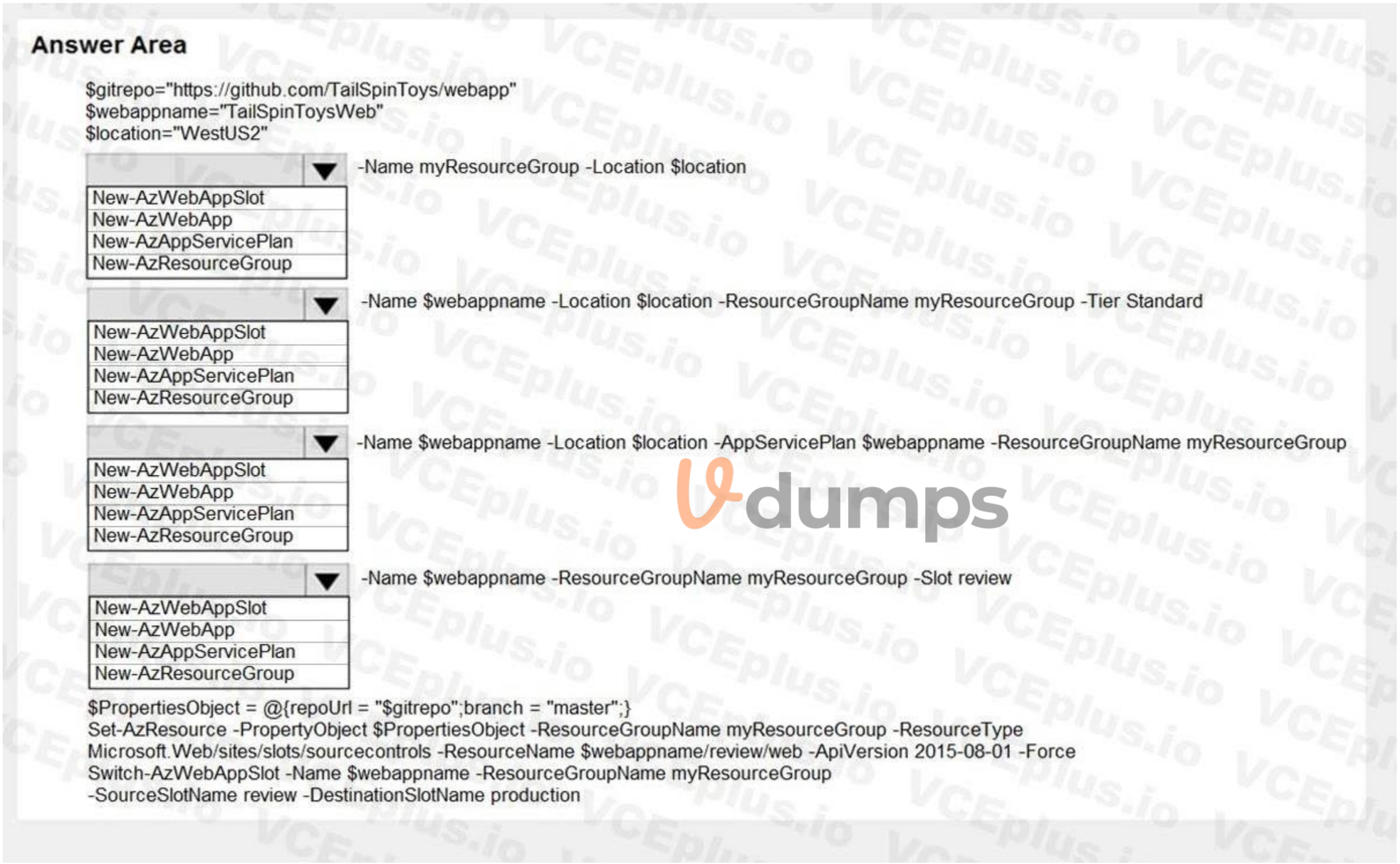


Section:
Explanation:
Reference:
https://docs.microsoft.com/en-us/azure/automation/automation-hybrid-runbook-worker
https://docs.microsoft.com/en-us/azure/virtual-machines/windows/run-command

QUESTION 2
HOTSPOT
A company is developing a Node.js web app. The web app code is hosted in a GitHub repository located at https://github.com/TailSpinToys/webapp.
The web app must be reviewed before it is moved to production. You must deploy the initial code release to a deployment slot named review.
You need to create the web app and deploy the code.
How should you complete the commands? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:

Answer Area

```
$gitrepo="https://github.com/TailSpinToys/webapp"
$webappname="TailSpinToysWeb"
$location="WestUS2"
```

[▼] -Name myResourceGroup -Location $location

- New-AzWebAppSlot
- New-AzWebApp
- New-AzAppServicePlan
- New-AzResourceGroup

[▼] -Name $webappname -Location $location -ResourceGroupName myResourceGroup -Tier Standard

- New-AzWebAppSlot
- New-AzWebApp
- New-AzAppServicePlan
- New-AzResourceGroup

[▼] -Name $webappname -Location $location -AppServicePlan $webappname -ResourceGroupName myResourceGroup

- New-AzWebAppSlot
- New-AzWebApp
- New-AzAppServicePlan
- New-AzResourceGroup

[▼] -Name $webappname -ResourceGroupName myResourceGroup -Slot review

- New-AzWebAppSlot
- New-AzWebApp
- New-AzAppServicePlan
- New-AzResourceGroup

```
$PropertiesObject = @{repoUrl = "$gitrepo";branch = "master";}
Set-AzResource -PropertyObject $PropertiesObject -ResourceGroupName myResourceGroup -ResourceType
Microsoft.Web/sites/slots/sourcecontrols -ResourceName $webappname/review/web -ApiVersion 2015-08-01 -Force
Switch-AzWebAppSlot -Name $webappname -ResourceGroupName myResourceGroup
-SourceSlotName review -DestinationSlotName production
```

Section:

Explanation:

Box 1: New-AzResourceGroup

The New-AzResourceGroup cmdlet creates an Azure resource group.

Box 2: New-AzAppServicePlan

The New-AzAppServicePlan cmdlet creates an Azure App Service plan in a given location

Box 3: New-AzWebApp

The New-AzWebApp cmdlet creates an Azure Web App in a given a resource group

Box 4: New-AzWebAppSlot

The New-AzWebAppSlot cmdlet creates an Azure Web App slot.

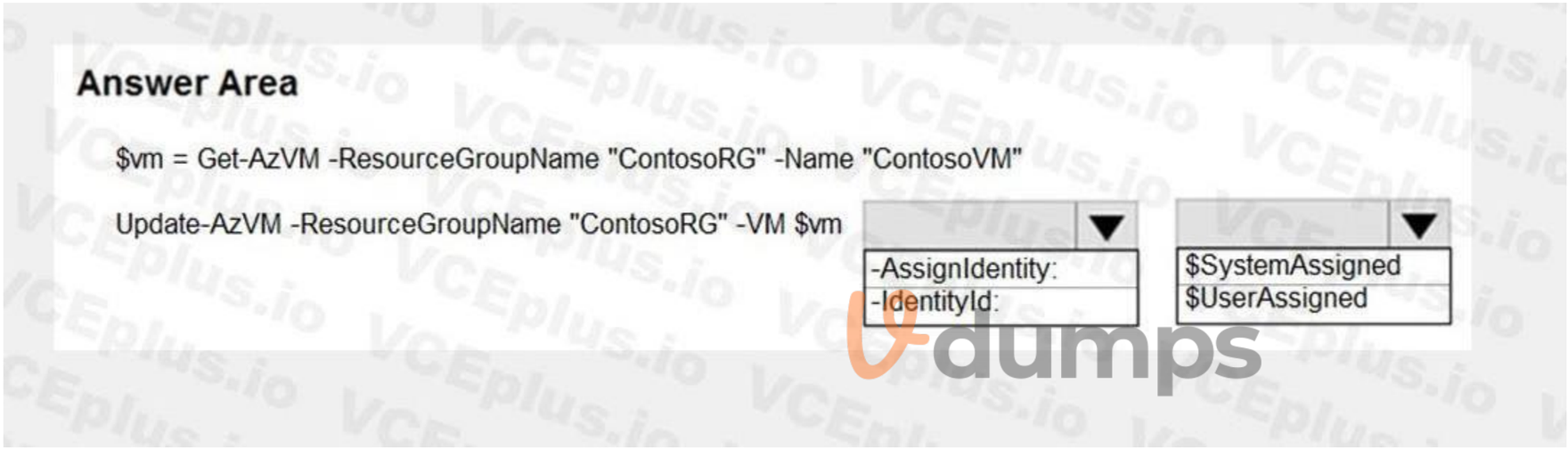
Reference:

https://docs.microsoft.com/en-us/powershell/module/az.resources/new-azresourcegroup?view=azps-2.3.2

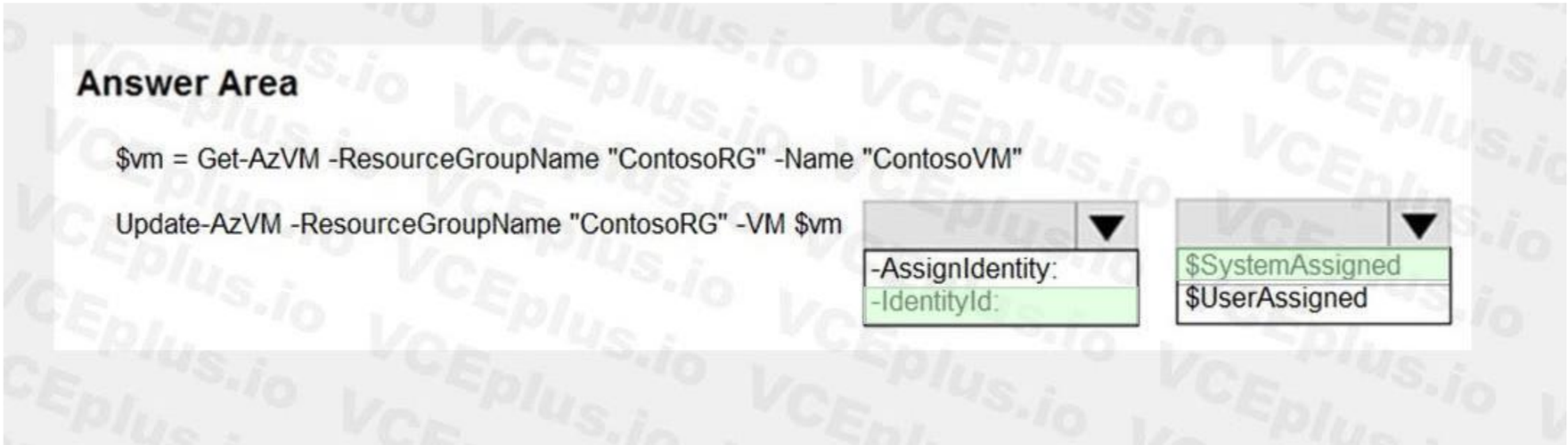
https://docs.microsoft.com/en-us/powershell/module/az.websites/new-azappserviceplan?view=azps-2.3.2
https://docs.microsoft.com/en-us/powershell/module/az.websites/new-azwebapp?view=azps-2.3.2
https://docs.microsoft.com/en-us/powershell/module/az.websites/new-azwebappslot?view=azps-2.3.2

QUESTION 3
HOTSPOT
You are developing an application that needs access to an Azure virtual machine (VM).
The access lifecycle for the application must be associated with the VM service instance.
You need to enable managed identity for the VM.
How should you complete the PowerShell segment? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:

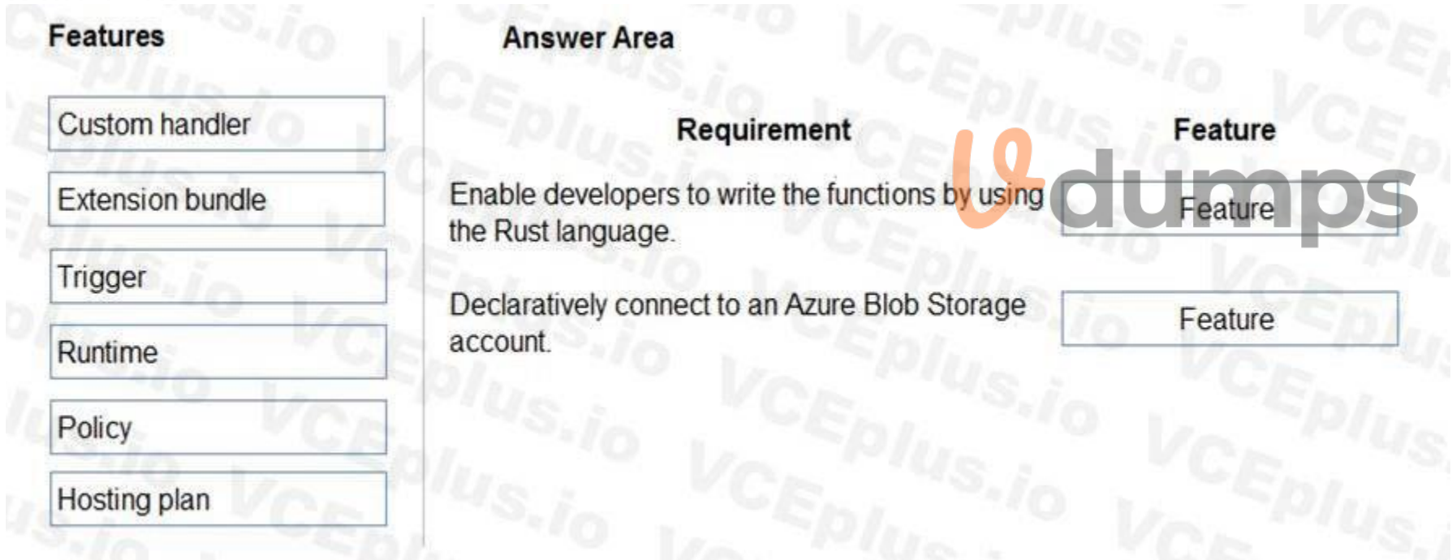


Section:
Explanation:
Box 1: -IdentityType
Enable system-assigned managed identity on an existing Azure VM:

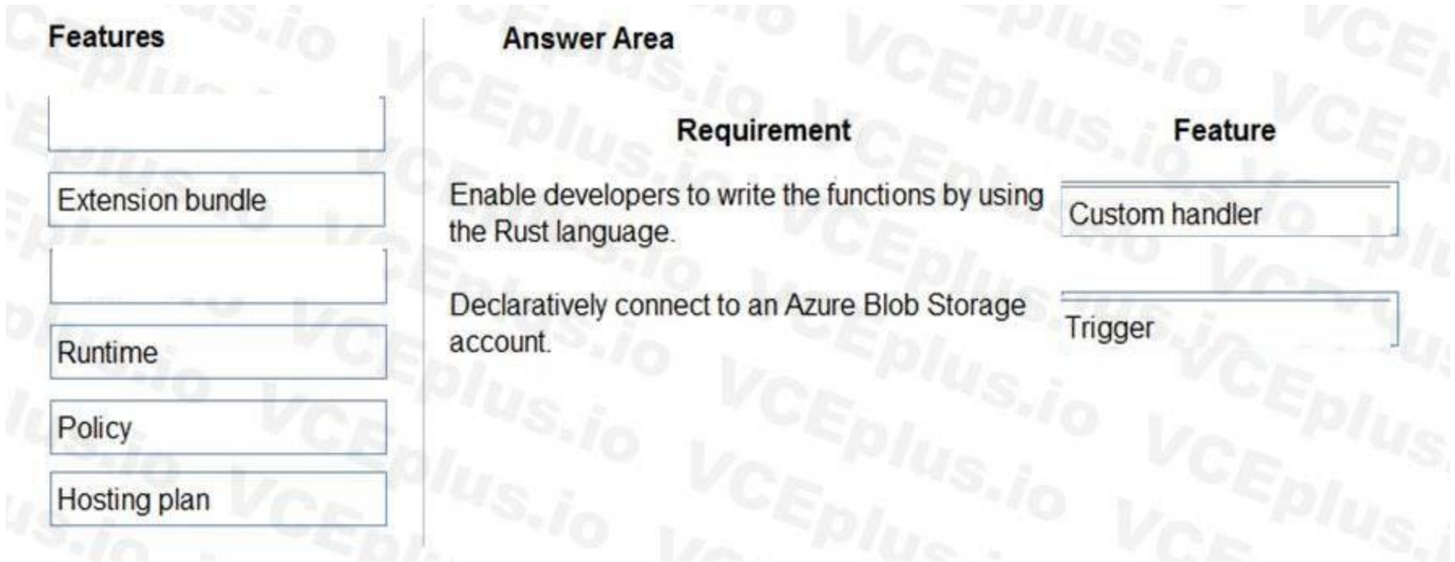
To enable a system-assigned managed identity, use the -IdentityType switch on the Update-AzVM cmdlet (see below).
Box 2: $SystemAssigned
$vm = Get-AzVM -ResourceGroupName myResourceGroup -Name myVM
Update-AzVM -ResourceGroupName myResourceGroup -VM $vm -IdentityType SystemAssigned
Reference:
https://docs.microsoft.com/en-us/azure/active-directory/managed-identities-azure-resources/qs-configure-powershell-windows-vm

QUESTION 4
DRAG DROP
You are developing an Azure Function app.
The app must meet the following requirements:
Enable developers to write the functions by using the Rust language.
Declaratively connect to an Azure Blob Storage account.
You need to implement the app.
Which Azure Function app features should you use? To answer, drag the appropriate features to the correct requirements. Each feature 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.
NOTE: Each correct selection is worth one point.

Select and Place:



Correct Answer:



Section:
Explanation:
Box 1: Custom handler
Custom handlers can be used to create functions in any language or runtime by running an HTTP server process, for example Go or Rust.
Box 2: Trigger
Functions are invoked by a trigger and can have exactly one. In addition to invoking the function, certain triggers also serve as bindings. You may also define multiple bindings in addition to the trigger. Bindings provide a declarative way to connect data to your code.
Reference:
https://docs.microsoft.com/en-us/azure/azure-functions/create-first-function-vs-code-other
https://docs.microsoft.com/en-us/dotnet/architecture/serverless/azure-functions

QUESTION 5
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.
You develop a software as a service (SaaS) offering to manage photographs. Users upload photos to a web service which then stores the photos in Azure Storage Blob storage. The storage account type is General-purpose V2.
When photos are uploaded, they must be processed to produce and save a mobile-friendly version of the image. The process to produce a mobile-friendly version of the image must start in less than one minute.
You need to design the process that starts the photo processing.
Solution: Use the Azure Blob Storage change feed to trigger photo processing.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section:
Explanation:
The change feed is a log of changes that are organized into hourly segments but appended to and updated every few minutes. These segments are created only when there are blob change events that occur in that hour.
Instead catch the triggered event, so move the photo processing to an Azure Function triggered from the blob upload.
Reference:
https://docs.microsoft.com/en-us/azure/storage/blobs/storage-blob-change-feed
https://docs.microsoft.com/en-us/azure/storage/blobs/storage-blob-event-overview

QUESTION 6
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.
You develop a software as a service (SaaS) offering to manage photographs. Users upload photos to a web service which then stores the photos in Azure Storage Blob storage. The storage account type is General-purpose V2.
When photos are uploaded, they must be processed to produce and save a mobile-friendly version of the image. The process to produce a mobile-friendly version of the image must start in less than one minute.
You need to design the process that starts the photo processing.
Solution: Create an Azure Function app that uses the Consumption hosting model and that is triggered from the blob upload.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: A
Section:
Explanation:
In the Consumption hosting plan, resources are added dynamically as required by your functions.
Reference:
https://docs.microsoft.com/en-us/azure/azure-functions/functions-create-storage-blob-triggered-function

QUESTION 7
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.
You develop and deploy an Azure App Service API app to a Windows-hosted deployment slot named Development. You create additional deployment slots named Testing and Production. You enable auto swap on the Production deployment slot.
You need to ensure that scripts run and resources are available before a swap operation occurs.
Solution: Update the app with a method named statuscheck to run the scripts. Update the app settings for the app. Set the WEBSITE_SWAP_WARMUP_PING_PATH and WEBSITE_SWAP_WARMUP_PING_STATUSES with a path to the new method and appropriate response codes.
Does the solution meet the goal?

A. No
B. Yes

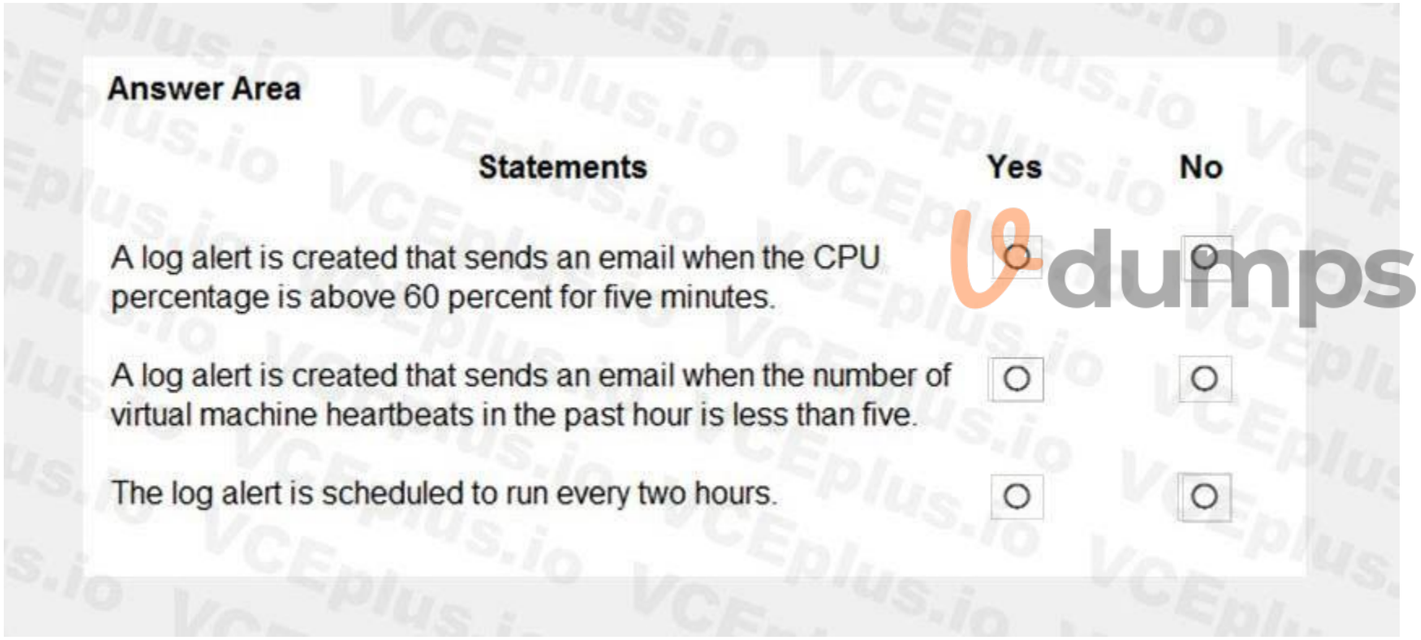
Correct Answer: B
Section:
Explanation:
These are valid warm-up behavior options, but are not helpful in fixing swap problems.
Instead update the web.config file to include the applicationInitialization configuration element. Specify custom initialization actions to run the scripts.
Note: Some apps might require custom warm-up actions before the swap. The applicationInitialization configuration element in web.config lets you specify custom initialization actions. The swap operation waits for this custom warm-up to finish before swapping with the target slot. Here's a sample web.config fragment.
<system.webServer>
<applicationInitialization>
<add initializationPage="/" hostName="[app hostname]" />
<add initializationPage="/Home/About" hostName="[app hostname]" />
</applicationInitialization>
</system.webServer>
Reference:
https://docs.microsoft.com/en-us/azure/app-service/deploy-staging-slots#troubleshoot-swaps

QUESTION 8
HOTSPOT
You create the following PowerShell script:

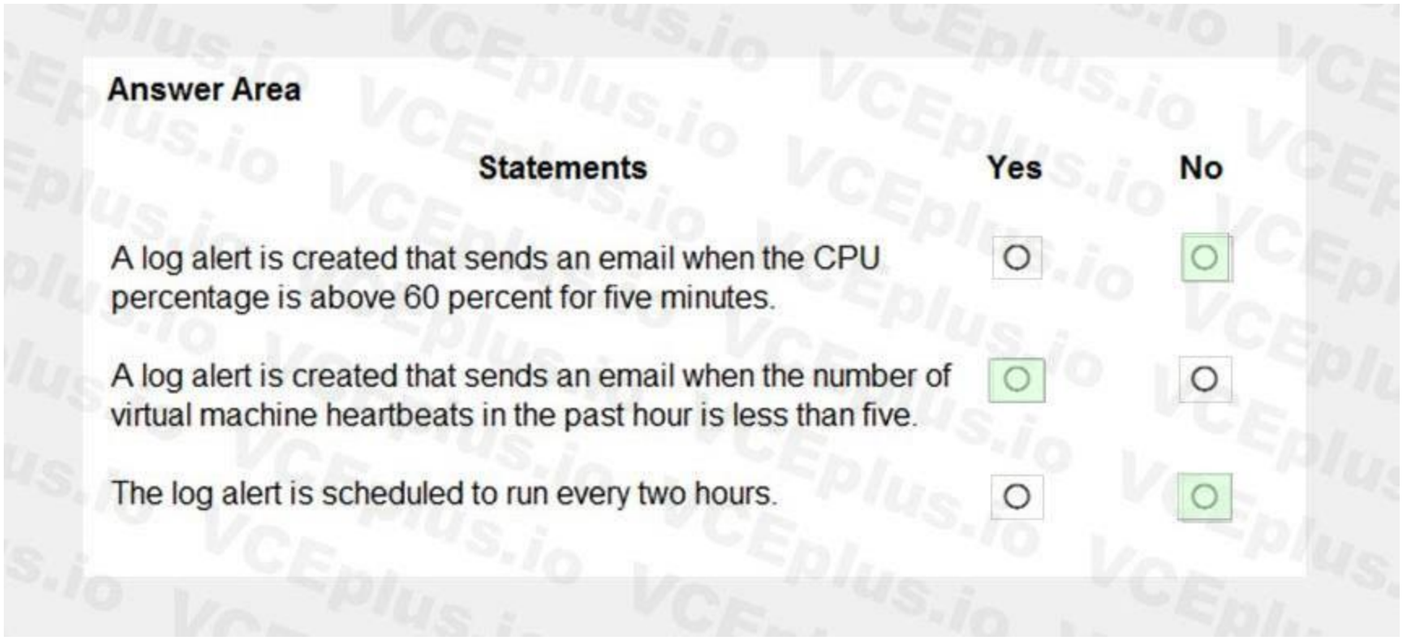
```
$source = New-AzScheduledQueryRuleSource -Query 'Heartbeat | where TimeGenerated > ago(1h)' -DataSourceId "contoso"
$schedule = New-AzScheduledQueryRuleSchedule -FrequencyInMinutes 60 -TimeWindowInMinutes 60
$triggerCondition = New-AzScheduledQueryRuleTriggerCondition -ThresholdOperator "LessThan" -Threshold 5
$aznsActionGroup = New-AzScheduledQueryRuleAznsActionGroup -ActionGroup "contoso" -EmailSubject "Custom email subject"
 -CustomWebhookPayload "{ '"alert'":'"#alertrulename'", '"IncludeSearchResults'":true }"
$alertingAction = New-AzScheduledQueryRuleAlertingAction -AznsAction $aznsActionGroup -Severity "3" -Trigger $triggerCondition
New-AzScheduledQueryRule -ResourceGroupName "contoso" -Location "eastus" -Action $alertingAction -Enabled $true
 -Description "Alert description" -Schedule $schedule -Source $source -Name "Alert Name"
```

For each of the following statements, select Yes if the statement is true. Otherwise, select No,
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:



Section:
Explanation:
Box 1: No
The AzScheduledQueryRuleSource is Heartbeat, not CPU.
Box 2: Yes
The AzScheduledQueryRuleSource is Heartbeat!
Note: New-AzScheduledQueryRuleTriggerCondition creates an object of type Trigger Condition. This object is to be passed to the command that creates Alerting Action object.
Box 3: No
The schedule is 60 minutes, not two hours.
-FrequencyInMinutes: The alert frequency.
-TimeWindowInMinutes: The alert time window
The New-AzAscheduledQueryRuleSchedule command creates an object of type Schedule. This object is to be passed to the command that creates Log Alert Rule.
Reference:
https://docs.microsoft.com/en-us/powershell/module/az.monitor/new-azscheduledqueryrule
https://docs.microsoft.com/en-us/powershell/module/az.monitor/new-azscheduledqueryruletriggercondition

QUESTION 9
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.
You develop a software as a service (SaaS) offering to manage photographs. Users upload photos to a web service which then stores the photos in Azure Storage Blob storage. The storage account type is General-purpose V2.
When photos are uploaded, they must be processed to produce and save a mobile-friendly version of the image. The process to produce a mobile-friendly version of the image must start in less than one minute.
You need to design the process that starts the photo processing.
Solution: Move photo processing to an Azure Function triggered from the blob upload.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: A

Section:
Explanation:
Azure Storage events allow applications to react to events. Common Blob storage event scenarios include image or video processing, search indexing, or any file-oriented workflow.
Events are pushed using Azure Event Grid to subscribers such as Azure Functions, Azure Logic Apps, or even to your own http listener.
Note: Only storage accounts of kind StorageV2 (general purpose v2) and BlobStorage support event integration. Storage (general purpose v1) does not support integration with Event Grid.
Reference:
https://docs.microsoft.com/en-us/azure/storage/blobs/storage-blob-event-overview

QUESTION 10
You are developing an application that uses Azure Blob storage.
The application must read the transaction logs of all the changes that occur to the blobs and the blob metadata in the storage account for auditing purposes. The changes must be in the order in which they occurred, include only create, update, delete, and copy operations and be retained for compliance reasons.
You need to process the transaction logs asynchronously.
What should you do?

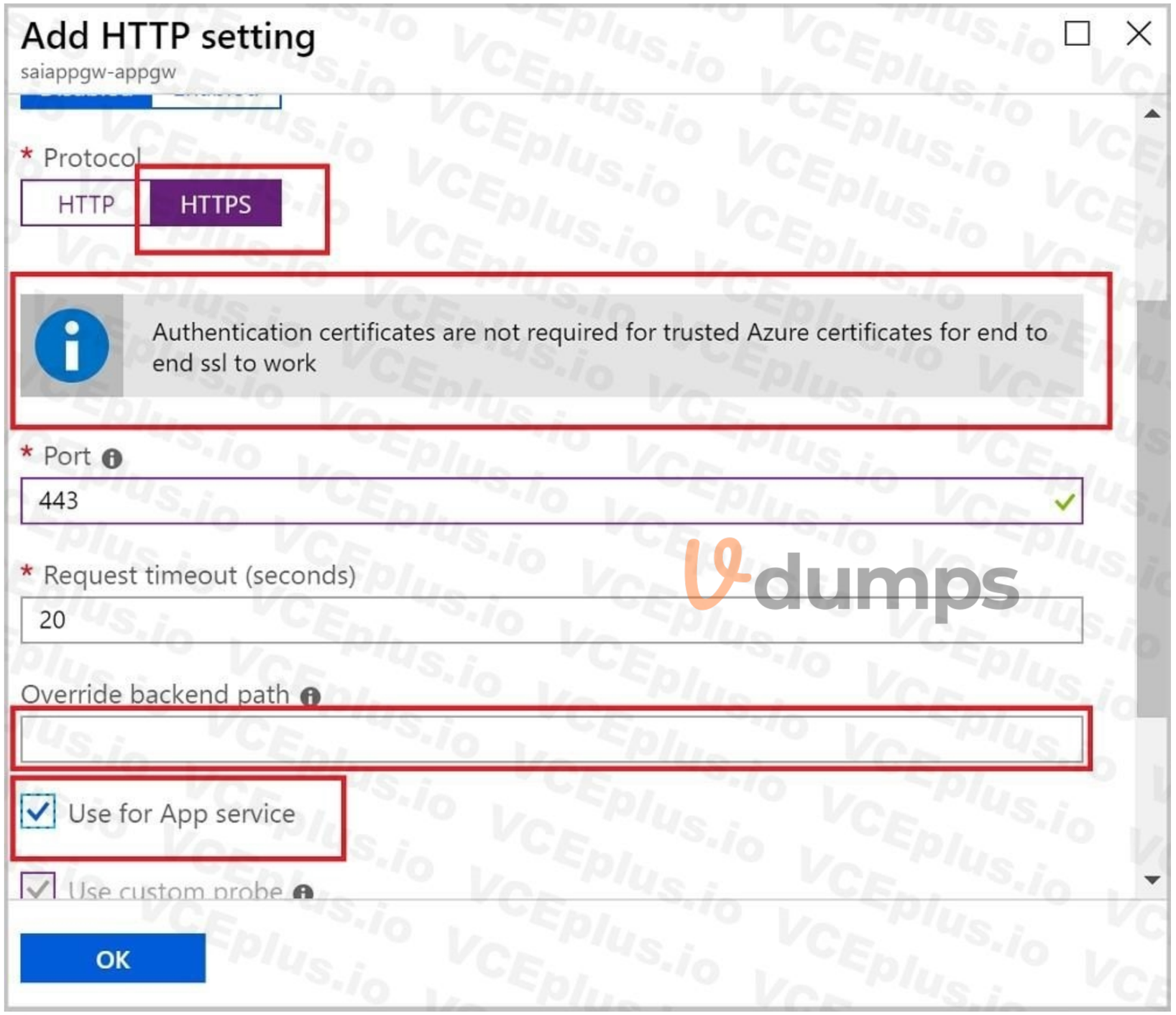
A. Process all Azure Blob storage events by using Azure Event Grid with a subscriber Azure Function app.
B. Enable the change feed on the storage account and process all changes for available events.
C. Process all Azure Storage Analytics logs for successful blob events.
D. Use the Azure Monitor HTTP Data Collector API and scan the request body for successful blob events.

Correct Answer: B
Section:
Explanation:
Change feed support in Azure Blob Storage The purpose of the change feed is to provide transaction logs of all the changes that occur to the blobs and the blob metadata in your storage account. The change feed provides ordered, guaranteed, durable, immutable, read-only log of these changes. Client applications can read these logs at any time, either in streaming or in batch mode. The change feed enables you to build efficient and scalable solutions that process change events that occur in your Blob Storage account at a low cost.
Reference: https://docs.microsoft.com/en-us/azure/storage/blobs/storage-blob-change-feed

QUESTION 11
You are developing a web app that is protected by Azure Web Application Firewall (WAF). All traffic to the web app is routed through an Azure Application Gateway instance that is used by multiple web apps. The web app address is contoso.azurewebsites.net.
All traffic must be secured with SSL. The Azure Application Gateway instance is used by multiple web apps.
You need to configure the Azure Application Gateway for the web app.
Which two actions should you perform? Each correct answer presents part of the solution.
NOTE: Each correct selection is worth one point.

A. In the Azure Application Gateway's HTTP setting, enable the Use for App service setting.
B. Convert the web app to run in an Azure App service environment (ASE).
C. Add an authentication certificate for contoso.azurewebsites.net to the Azure Application Gateway.
D. In the Azure Application Gateway's HTTP setting, set the value of the Override backend path option to contoso22.azurewebsites.net.

Correct Answer: A, D
Section:
Explanation:
D: The ability to specify a host override is defined in the HTTP settings and can be applied to any back-end pool during rule creation.
The ability to derive the host name from the IP or FQDN of the back-end pool members. HTTP settings also provide an option to dynamically pick the host name from a back-end pool member's FQDN if configured with the option to derive host name from an individual back-end pool member.
A (not C): SSL termination and end to end SSL with multi-tenant services.
In case of end to end SSL, trusted Azure services such as Azure App service web apps do not require whitelisting the backends in the application gateway. Therefore, there is no need to add any authentication certificates.



Reference:
https://docs.microsoft.com/en-us/azure/application-gateway/application-gateway-web-app-overview

QUESTION 12
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.
You develop a software as a service (SaaS) offering to manage photographs. Users upload photos to a web service which then stores the photos in Azure Storage Blob storage. The storage account type is General-purpose V2.
When photos are uploaded, they must be processed to produce and save a mobile-friendly version of the image. The process to produce a mobile-friendly version of the image must start in less than one minute.
You need to design the process that starts the photo processing.
Solution: Trigger the photo processing from Blob storage events.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section:
Explanation:
You need to catch the triggered event, so move the photo processing to an Azure Function triggered from the blob upload
Note: Azure Storage events allow applications to react to events. Common Blob storage event scenarios include image or video processing, search indexing, or any file-oriented workflow.
Events are pushed using Azure Event Grid to subscribers such as Azure Functions, Azure Logic Apps, or even to your own http listener.
Note: Only storage accounts of kind StorageV2 (general purpose v2) and BlobStorage support event integration. Storage (general purpose v1) does not support integration with Event Grid.
Reference:
https://docs.microsoft.com/en-us/azure/storage/blobs/storage-blob-event-overview

QUESTION 13
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.
You develop and deploy an Azure App Service API app to a Windows-hosted deployment slot named Development. You create additional deployment slots named Testing and Production. You enable auto swap on the Production deployment slot.
You need to ensure that scripts run and resources are available before a swap operation occurs.
Solution: Update the web.config file to include the applicationInitialization configuration element. Specify custom initialization actions to run the scripts.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: A
Section:
Explanation:
Specify custom warm-up.
Some apps might require custom warm-up actions before the swap. The applicationInitialization configuration element in web.config lets you specify custom initialization actions. The swap operation waits for this custom warm-up to finish before swapping with the target slot. Here's a sample web.config fragment.
<system.webServer>
<applicationInitialization>
<add initializationPage="/" hostName="[app hostname]" />
<add initializationPage="/Home/About" hostName="[app hostname]" />
</applicationInitialization> </system.webServer>
Reference:
https://docs.microsoft.com/en-us/azure/app-service/deploy-staging-slots#troubleshoot-swaps

QUESTION 14
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.
You develop and deploy an Azure App Service API app to a Windows-hosted deployment slot named Development. You create additional deployment slots named Testing and Production. You enable auto swap on the Production deployment slot.
You need to ensure that scripts run and resources are available before a swap operation occurs.
Solution: Enable auto swap for the Testing slot. Deploy the app to the Testing slot.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section:
Explanation:
Instead update the web.config file to include the applicationInitialization configuration element. Specify custom initialization actions to run the scripts.
Note: Some apps might require custom warm-up actions before the swap. The applicationInitialization configuration element in web.config lets you specify custom initialization actions. The swap operation waits for this custom warm-up to finish before swapping with the target slot. Here's a sample web.config fragment.
<system.webServer>
<applicationInitialization>
<add initializationPage="/" hostName="[app hostname]" />
<add initializationPage="/Home/About" hostName="[app hostname]" />
</applicationInitialization>
</system.webServer>
Reference:
https://docs.microsoft.com/en-us/azure/app-service/deploy-staging-slots#troubleshoot-swaps

QUESTION 15
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.
You develop and deploy an Azure App Service API app to a Windows-hosted deployment slot named Development. You create additional deployment slots named Testing and Production. You enable auto swap on the Production deployment slot.
You need to ensure that scripts run and resources are available before a swap operation occurs.
Solution: Disable auto swap. Update the app with a method named statuscheck to run the scripts. Re-enable auto swap and deploy the app to the Production slot.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section:
Explanation:
Instead update the web.config file to include the applicationInitialization configuration element. Specify custom initialization actions to run the scripts.
Note: Some apps might require custom warm-up actions before the swap. The applicationInitialization configuration element in web.config lets you specify custom initialization actions. The swap operation waits for this custom warm-up to finish before swapping with the target slot. Here's a sample web.config fragment.
<system.webServer>
<applicationInitialization>
<add initializationPage="/" hostName="[app hostname]" />
<add initializationPage="/Home/About" hostName="[app hostname]" />

</applicationInitialization> </system.webServer>
Reference:
https://docs.microsoft.com/en-us/azure/app-service/deploy-staging-slots#troubleshoot-swaps

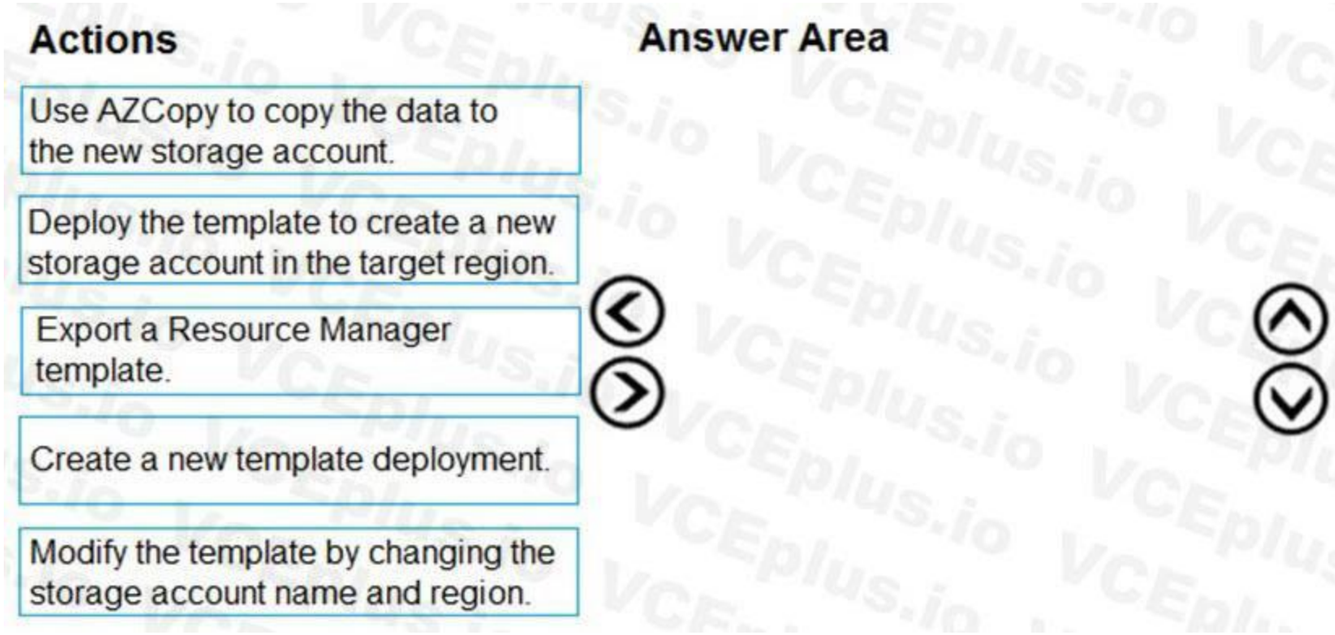
QUESTION 16
Note: This question-is part of a series of questions that present the same scenario. Each question-in the series contains a unique solution that might meet the stated goals. Some question-sets might have more than one correct solution, while others might not have a correct solution.
After 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.
You develop a software as a service (SaaS) offering to manage photographs. Users upload photos to a web service which then stores the photos in Azure Storage Blob storage. The storage account type is General-purpose V2.
When photos are uploaded, they must be processed to produce and save a mobile-friendly version of the image. The process to produce a mobile-friendly version of the image must start in less than one minute.
You need to design the process that starts the photo processing.
Solution: Convert the Azure Storage account to a BlockBlobStorage storage account.
Does the solution meet the goal?

A. Yes
B. No

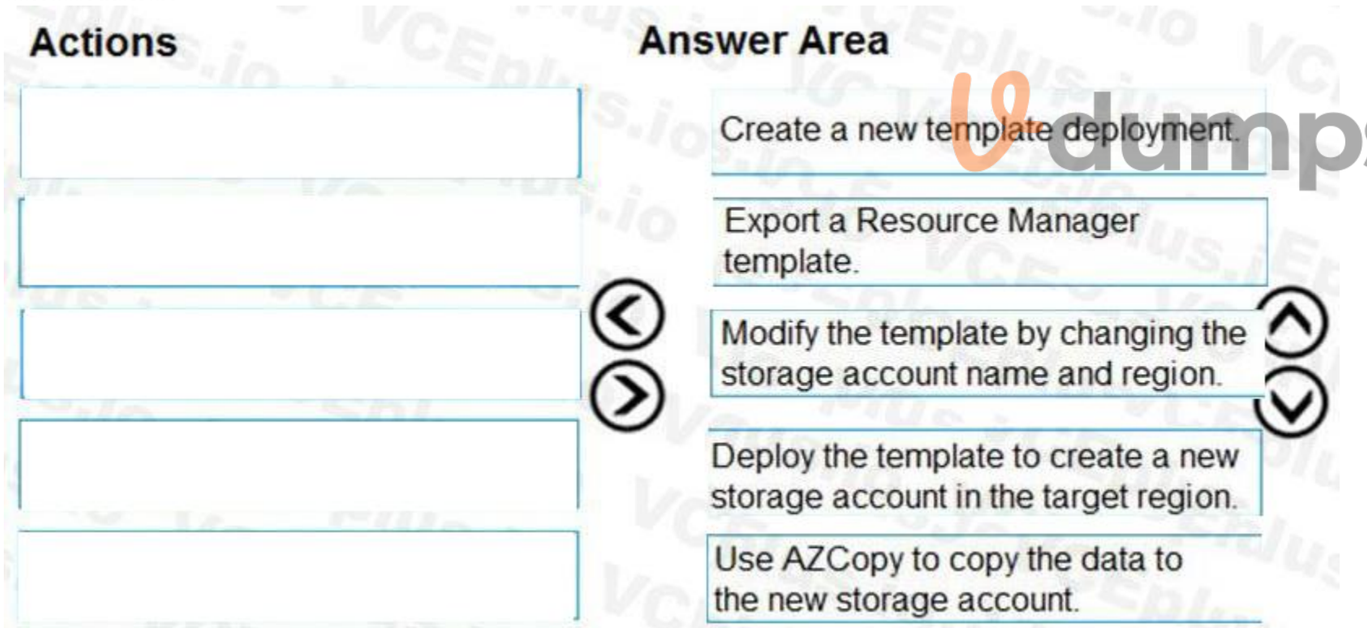
Correct Answer: B
Section:
Explanation:
Not necessary to convert the account, instead move photo processing to an Azure Function triggered from the blob upload..
Azure Storage events allow applications to react to events. Common Blob storage event scenarios include image or video processing, search indexing, or any file-oriented workflow.
Note: Only storage accounts of kind StorageV2 (general purpose v2) and BlobStorage support event integration. Storage (general purpose v1) does not support integration with Event Grid.
Reference: https://docs.microsoft.com/en-us/azure/storage/blobs/storage-blob-event-overview

QUESTION 17
DRAG DROP
You are developing an application to use Azure Blob storage. You have configured Azure Blob storage to include change feeds.
A copy of your storage account must be created in another region. Data must be copied from the current storage account to the new storage account directly between the storage servers.
You need to create a copy of the storage account in another region and copy the data.
In which order should you perform the actions? To answer, move all actions from the list of actions to the answer area and arrange them in the correct order.

Select and Place:



Correct Answer:



Section:

Explanation:

To move a storage account, create a copy of your storage account in another region. Then, move your data to that account by using AzCopy, or another tool of your choice.

The steps are:

Export a template.

Modify the template by adding the target region and storage account name.

Deploy the template to create the new storage account.

Configure the new storage account.

Move data to the new storage account.

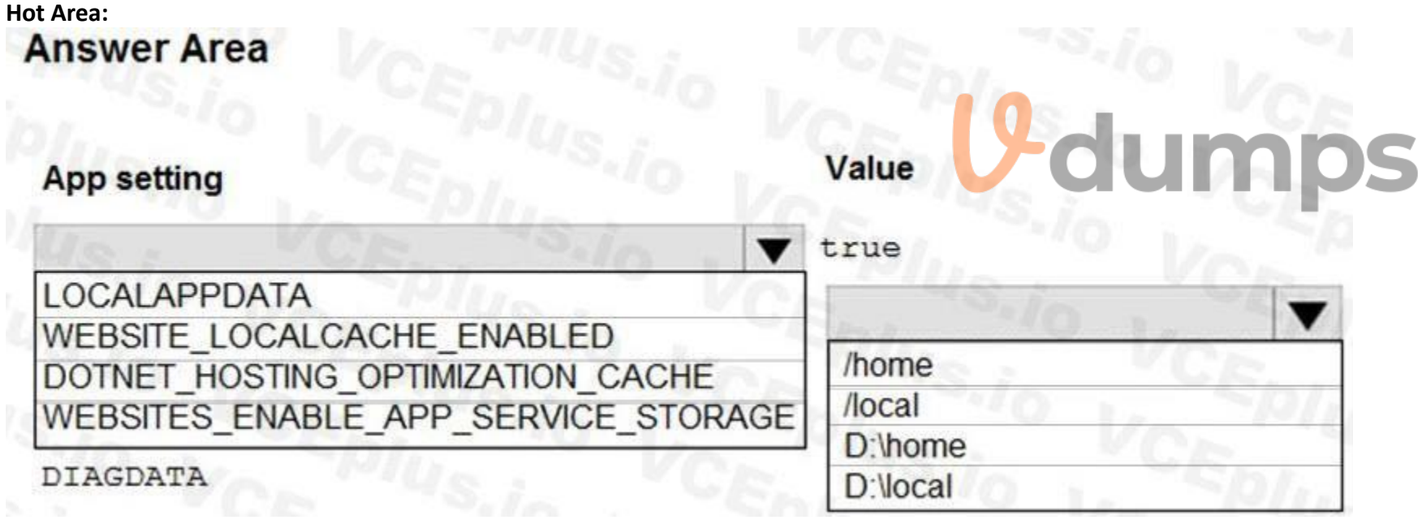
Delete the resources in the source region.
Note: You must enable the change feed on your storage account to begin capturing and recording changes. You can enable and disable changes by using Azure Resource Manager templates on Portal or Powershell.
Reference:
https://docs.microsoft.com/en-us/azure/storage/common/storage-account-move
https://docs.microsoft.com/en-us/azure/storage/blobs/storage-blob-change-feed

QUESTION 18
HOTSPOT
You are developing an ASP.NET Core web application. You plan to deploy the application to Azure Web App for Containers.
The application needs to store runtime diagnostic data that must be persisted across application restarts. You have the following code:

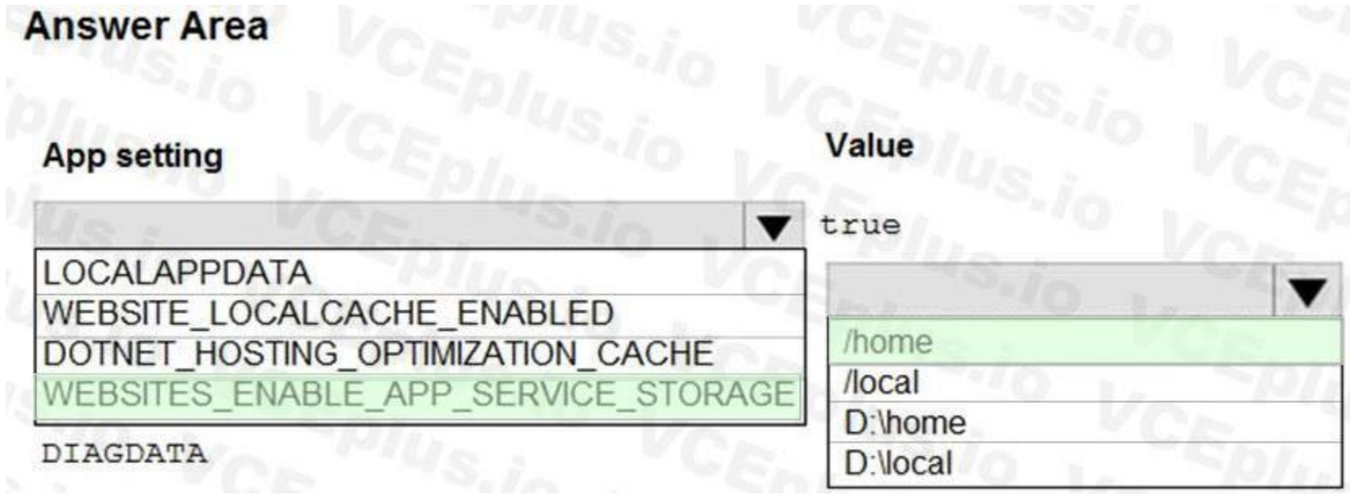
```
public void SaveDiagData(string data)
{
    var path = Environment.GetEnvironmentVariable("DIAGDATA");
    File.WriteAllText(Path.Combine(path, "data"), data);
}
```

You need to configure the application settings so that diagnostic data is stored as required.
How should you configure the web app's settings? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:



Section:

Explanation:

Box 1: If WEBSITES_ENABLE_APP_SERVICE_STORAGE

If WEBSITES_ENABLE_APP_SERVICE_STORAGE setting is unspecified or set to true, the /home/ directory will be shared across scale instances, and files written will persist across restarts

Box 2: /home

Reference:

https://docs.microsoft.com/en-us/azure/app-service/containers/app-service-linux-faq

QUESTION 19

HOTSPOT

You are implementing a software as a service (SaaS) ASP.NET Core web service that will run as an Azure Web App. The web service will use an on-premises SQL Server database for storage. The web service also includes a WebJob that processes data updates. Four customers will use the web service.

Each instance of the WebJob processes data for a single customer and must run as a singleton instance.

Each deployment must be tested by using deployment slots prior to serving production data.

Azure costs must be minimized.

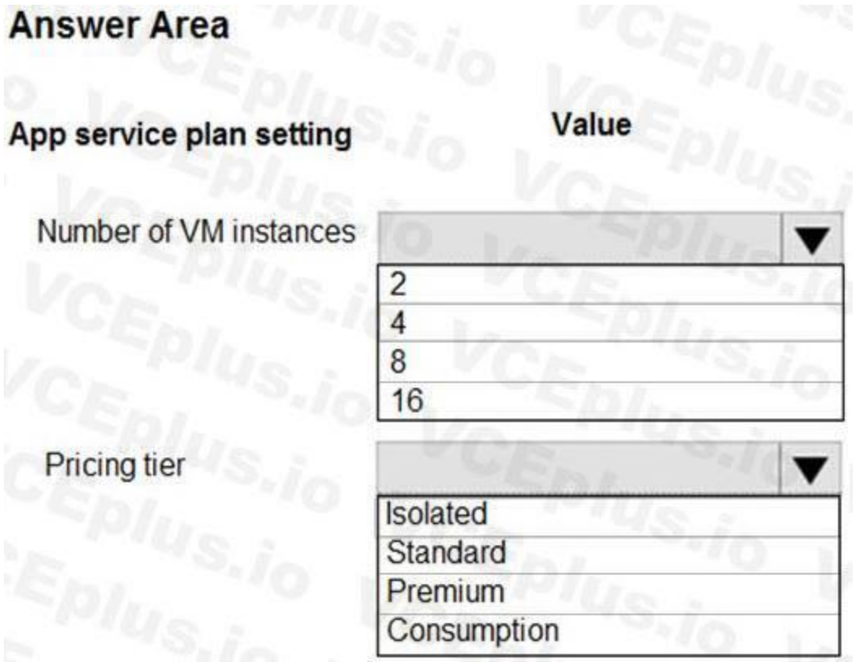
Azure resources must be located in an isolated network.

You need to configure the App Service plan for the Web App.

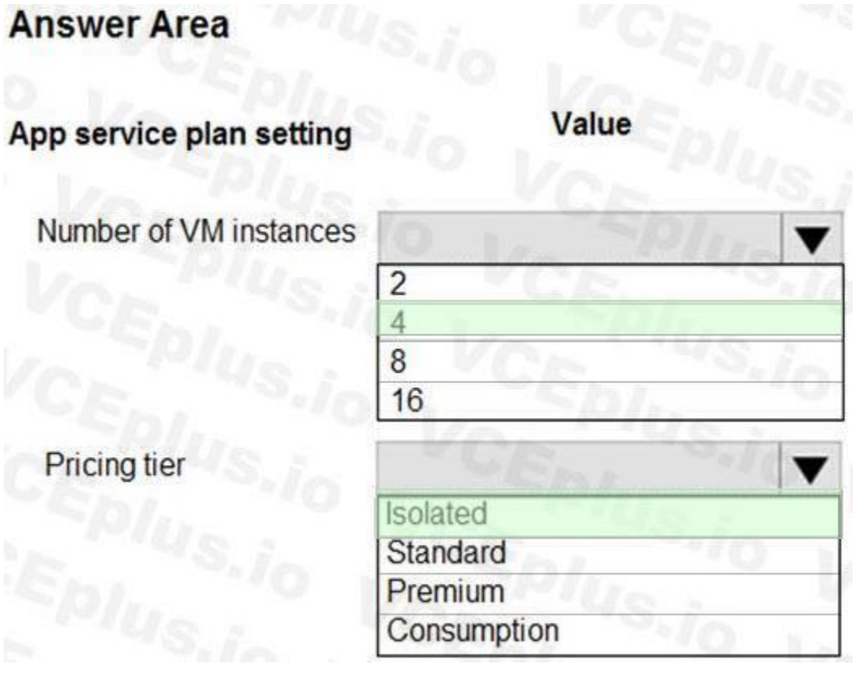
How should you configure the App Service plan? To answer, select the appropriate settings in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:



Section:

Explanation:

Number of VM instances: 4

You are not charged extra for deployment slots.

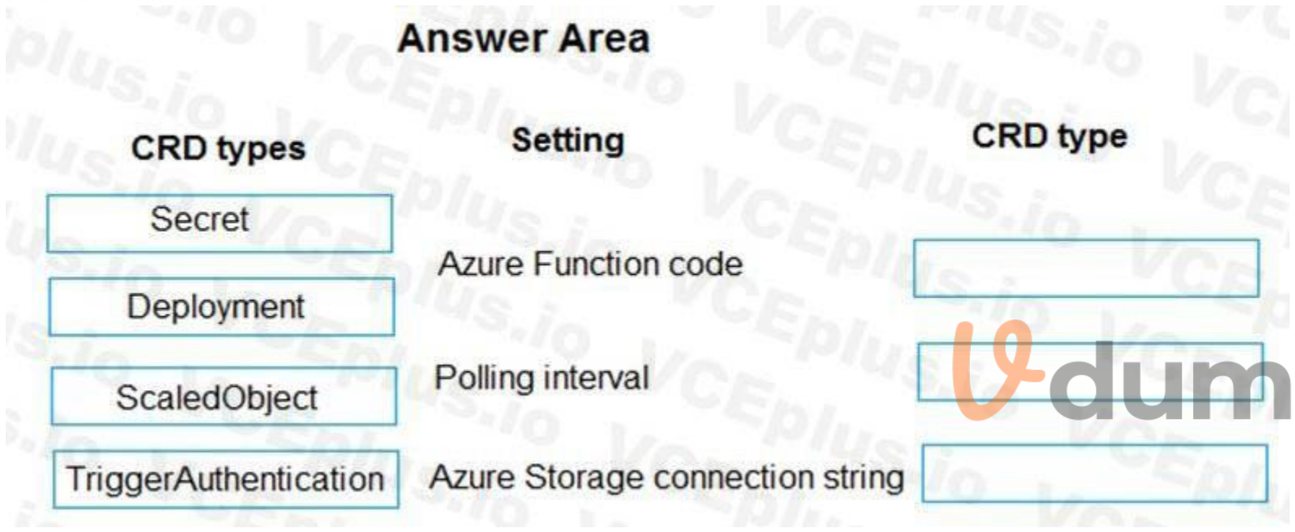
Pricing tier: Isolated The App Service Environment (ASE) is a powerful feature offering of the Azure App Service that gives network isolation and improved scale capabilities. It is essentially a deployment of the Azure App Service into a subnet of a customer's

Azure Virtual Network (VNet).

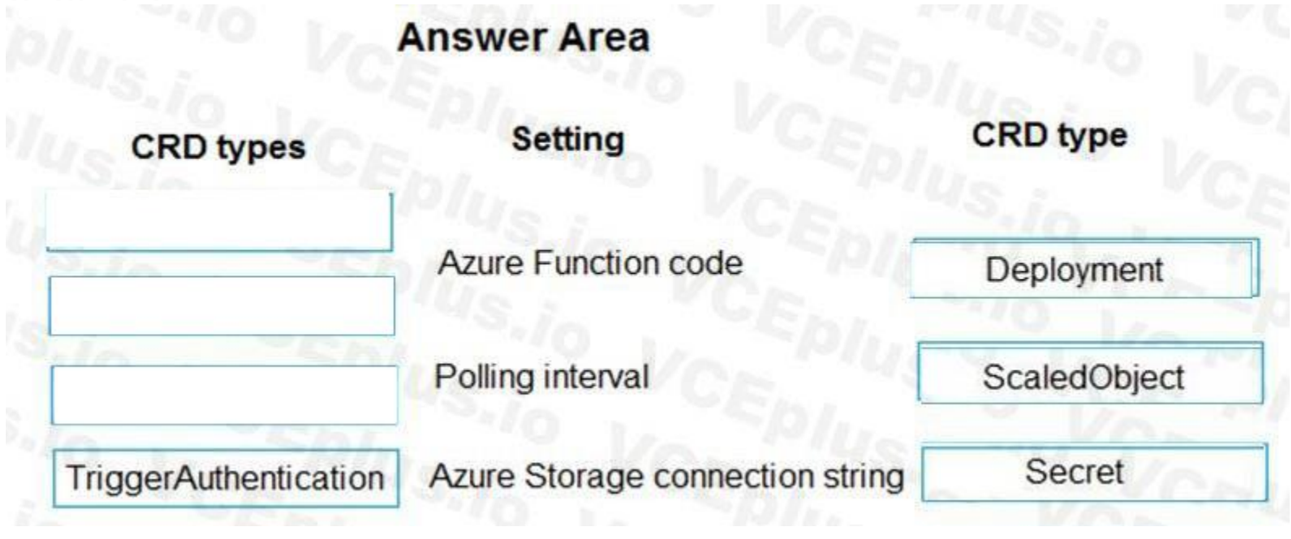
Reference:
https://azure.microsoft.com/sv-se/blog/announcing-app-service-isolated-more-power-scale-and-ease-of-use/

QUESTION 20
DRAG DROP
You are a developer for a software as a service (SaaS) company that uses an Azure Function to process orders. The Azure Function currently runs on an Azure Function app that is triggered by an Azure Storage queue.
You are preparing to migrate the Azure Function to Kubernetes using Kubernetes-based Event Driven Autoscaling (KEDA).
You need to configure Kubernetes Custom Resource Definitions (CRD) for the Azure Function.
Which CRDs should you configure? To answer, drag the appropriate CRD types to the correct locations. Each CRD type 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.
NOTE: Each correct selection is worth one point.

Select and Place:



Correct Answer:



Section:
Explanation:

Box 1: Deployment
To deploy Azure Functions to Kubernetes use the func kubernetes deploy command has several attributes that directly control how our app scales, once it is deployed to Kubernetes.
Box 2: ScaledObject
With --polling-interval, we can control the interval used by KEDA to check Azure Service Bus Queue for messages.
Example of ScaledObject with polling interval
apiVersion: keda.k8s.io/v1alpha1
kind: ScaledObject
metadata:
name: transformer-fn
namespace: tt
labels:
deploymentName: transformer-fn
spec:
scaleTargetRef:
deploymentName: transformer-fn
pollingInterval: 5
minReplicaCount: 0
maxReplicaCount: 100
Box 3: Secret
Store connection strings in Kubernetes Secrets.
Example: to create the Secret in our demo Namespace:
create the k8s demo namespace
kubectl create namespace tt
# grab connection string from Azure Service Bus
KEDA_SCALER_CONNECTION_STRING=$(az servicebus queue authorization-rule keys list \
-g $RG_NAME \
--namespace-name $SBN_NAME \
--queue-name inbound \
-n keda-scaler \
--query "primaryConnectionString" \
-o tsv)
create the kubernetes secret
kubectl create secret generic tt-keda-auth \
--from-literal KedaScaler=$KEDA_SCALER_CONNECTION_STRING \
--namespace tt
Reference:
https://www.thinktecture.com/en/kubernetes/serverless-workloads-with-keda/

QUESTION 21
HOTSPOT
You are creating a CLI script that creates an Azure web app and related services in Azure App Service. The web app uses the following variables:

Variable name	Value
$gitrepo	https://github.com/Contos/webapp
$webappname	Webapp1103

You need to automatically deploy code from GitHub to the newly created web app.
How should you complete the script? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

```
az group create --location westeurope --name myResourceGroup
```

[▼] `--name $webappname --resource-group myResourceGroup --sku FREE`

- az webapp
- az appservice plan create
- az webapp deployment
- az group delete

[▼] `--name $webappname --resource-group myResourceGroup`

- az webapp create
- az appservice plan create
- az webapp deployment
- az group delete

[▼]

- --repo-url $gitrepo --branch master --manual-integration
- git clone $gitrepo
- --plan $webappname

[▼] `source config --name $webappname`

- az webapp
- az appservice plan create
- az webapp deployment
- az group delete

`--resource-group myResourceGroup` [▼]

- --repo-url $gitrepo --branch master --manual-integration
- git clone $gitrepo
- --plan $webappname

Answer Area:

Answer Area

```
az group create --location westeurope --name myResourceGroup
```

[▼] `--name $webappname --resource-group myResourceGroup --sku FREE`

- az webapp
- az appservice plan create
- az webapp deployment
- az group delete

[▼] `--name $webappname --resource-group myResourceGroup`

- az webapp create
- az appservice plan create
- az webapp deployment
- az group delete

[▼]

- --repo-url $gitrepo --branch master --manual-integration
- git clone $gitrepo
- --plan $webappname

[▼] `source config --name $webappname`

- az webapp
- az appservice plan create
- az webapp deployment
- az group delete

`--resource-group myResourceGroup` [▼]

- --repo-url $gitrepo --branch master --manual-integration
- git clone $gitrepo
- --plan $webappname

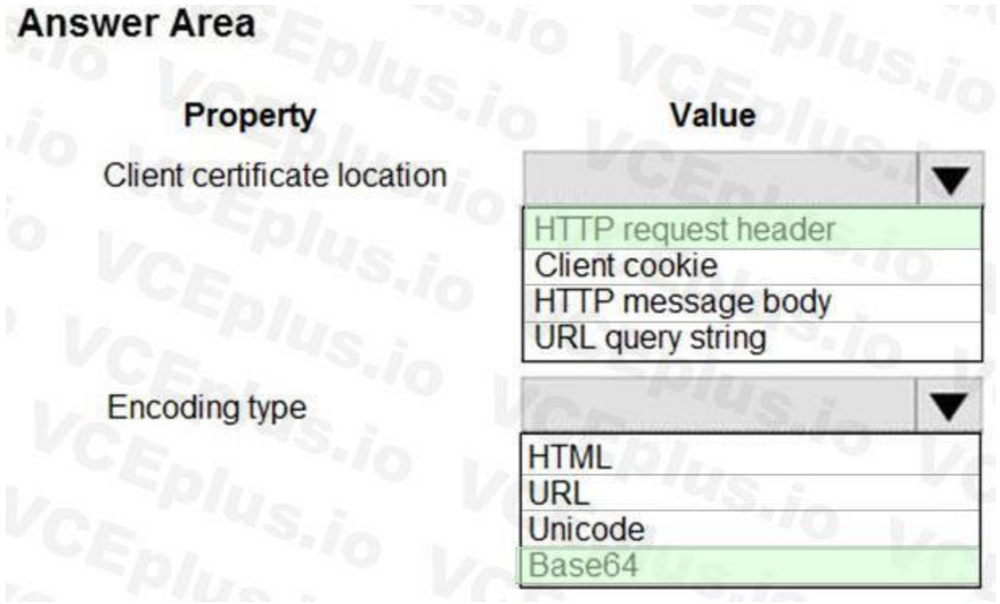
Section:
Explanation:
Box 1: az appservice plan create
The azure group creates command successfully returns JSON result. Now we can use resource group to create a azure app service plan
Box 2: az webapp create
Create a new web app..
Box 3: --plan $webappname
..with the serviceplan we created in step 1.
Box 4: az webapp deployment
Continuous Delivery with GitHub. Example:
az webapp deployment source config --name firstsamplewebsite1 --resource-group websites--repo-url $gitrepo --branch master --git-token $token

Box 5: --repo-url $gitrepo --branch master --manual-integration
Reference:
https://medium.com/@satish1v/devops-your-way-to-azure-web-apps-with-azure-cli-206ed4b3e9b1

QUESTION 22
HOTSPOT
You are developing an Azure Web App. You configure TLS mutual authentication for the web app.
You need to validate the client certificate in the web app. To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:

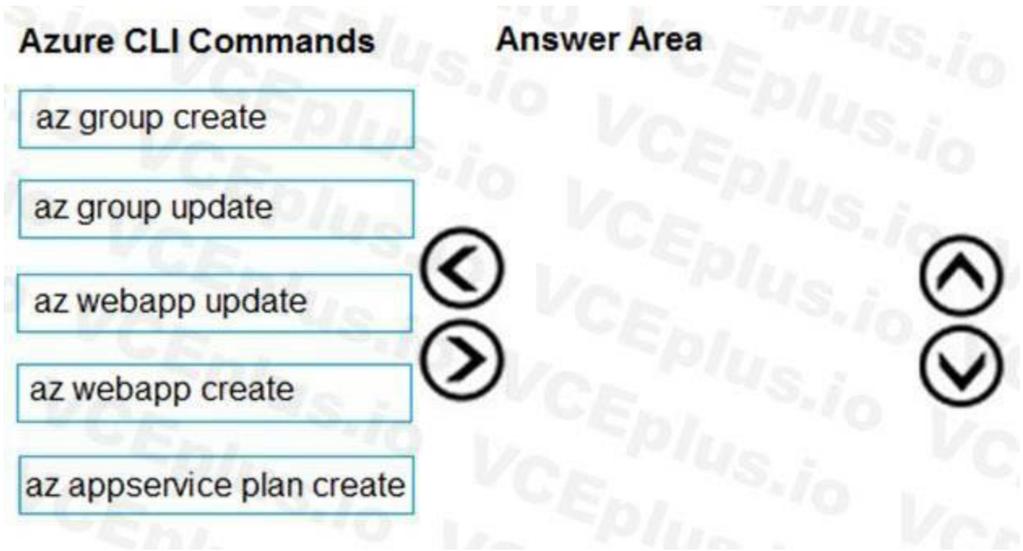
Answer Area:



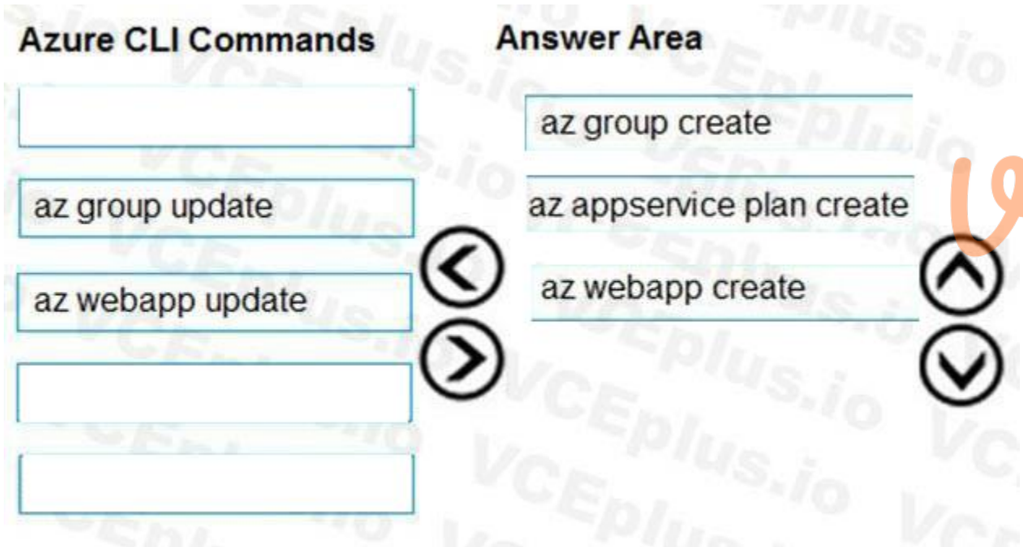
Section:
Explanation:
Accessing the client certificate from App Service.
If you are using ASP.NET and configure your app to use client certificate authentication, the certificate will be available through the HttpRequest.ClientCertificate property. For other application stacks, the client cert will be available in your app through a base64 encoded value in the "X-ARR-ClientCert" request header. Your application can create a certificate from this value and then use it for authentication and authorization purposes in your application.
Reference:
https://docs.microsoft.com/en-us/azure/app-service/app-service-web-configure-tls-mutual-auth

QUESTION 23
DRAG DROP
You are developing a Docker/Go using Azure App Service Web App for Containers. You plan to run the container in an App Service on Linux. You identify a Docker container image to use.
None of your current resource groups reside in a location that supports Linux. You must minimize the number of resource groups required.
You need to create the application and perform an initial deployment.
Which three Azure CLI commands should you use to develop the solution? To answer, move the appropriate commands from the list of commands to the answer area and arrange them in the correct order.

Select and Place:



Correct Answer:

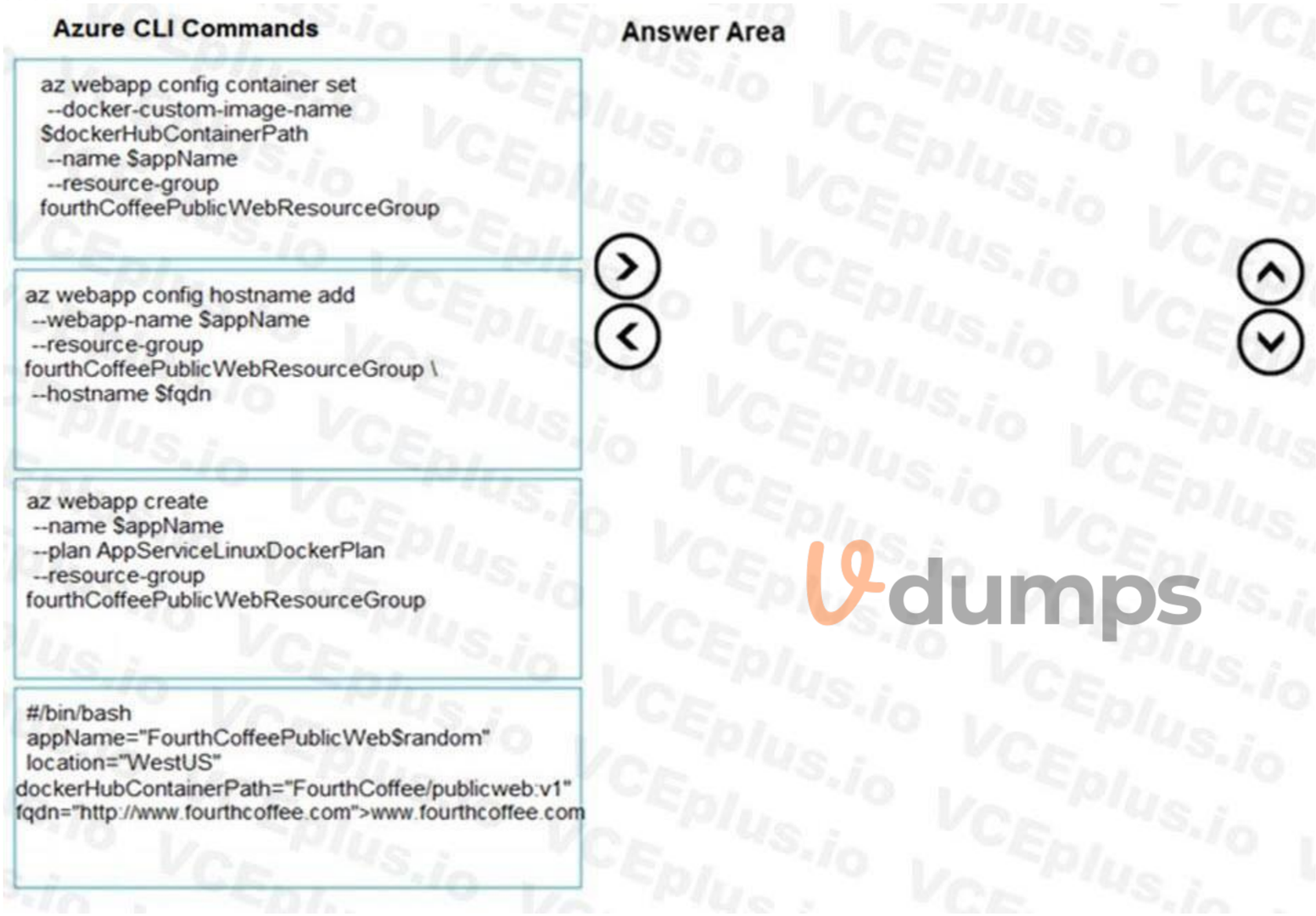


Section:
Explanation:
You can host native Linux applications in the cloud by using Azure Web Apps. To create a Web App for Containers, you must run Azure CLI commands that create a group, then a service plan, and finally the web app itself.
Step 1: az group create
In the Cloud Shell, create a resource group with the az group create command.
Step 2: az appservice plan create
In the Cloud Shell, create an App Service plan in the resource group with the az appservice plan create command.
Step 3: az webapp create
In the Cloud Shell, create a web app in the myAppServicePlan App Service plan with the az webapp create command. Don't forget to replace with a unique app name, and <docker-ID> with your Docker ID.
Reference:
https://docs.microsoft.com/mt-mt/azure/app-service/containers/quickstart-docker-go?view=sql-server-ver15

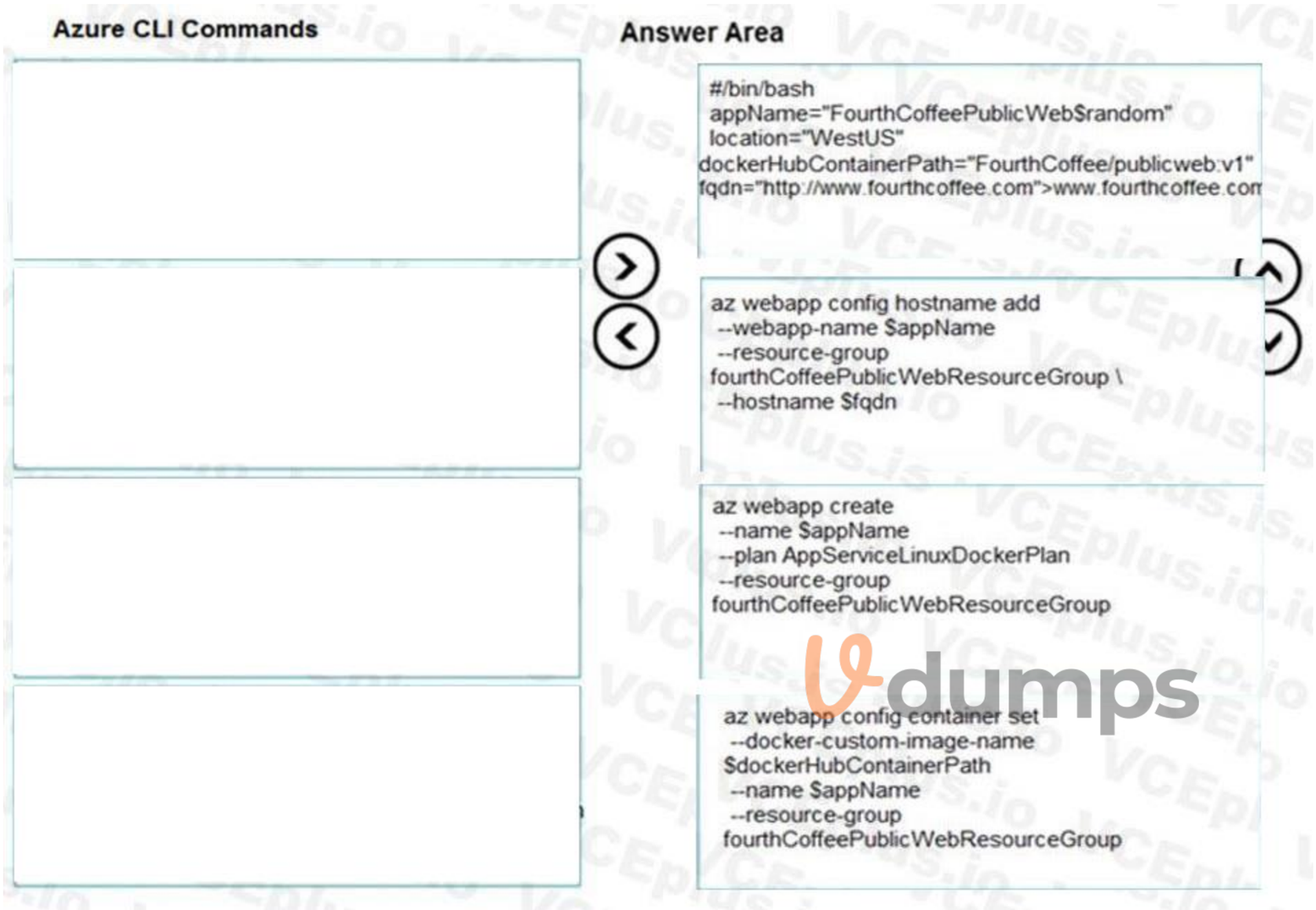
QUESTION 24
DRAG DROP

Fourth Coffee has an ASP.NET Core web app

Select and Place:



Correct Answer:

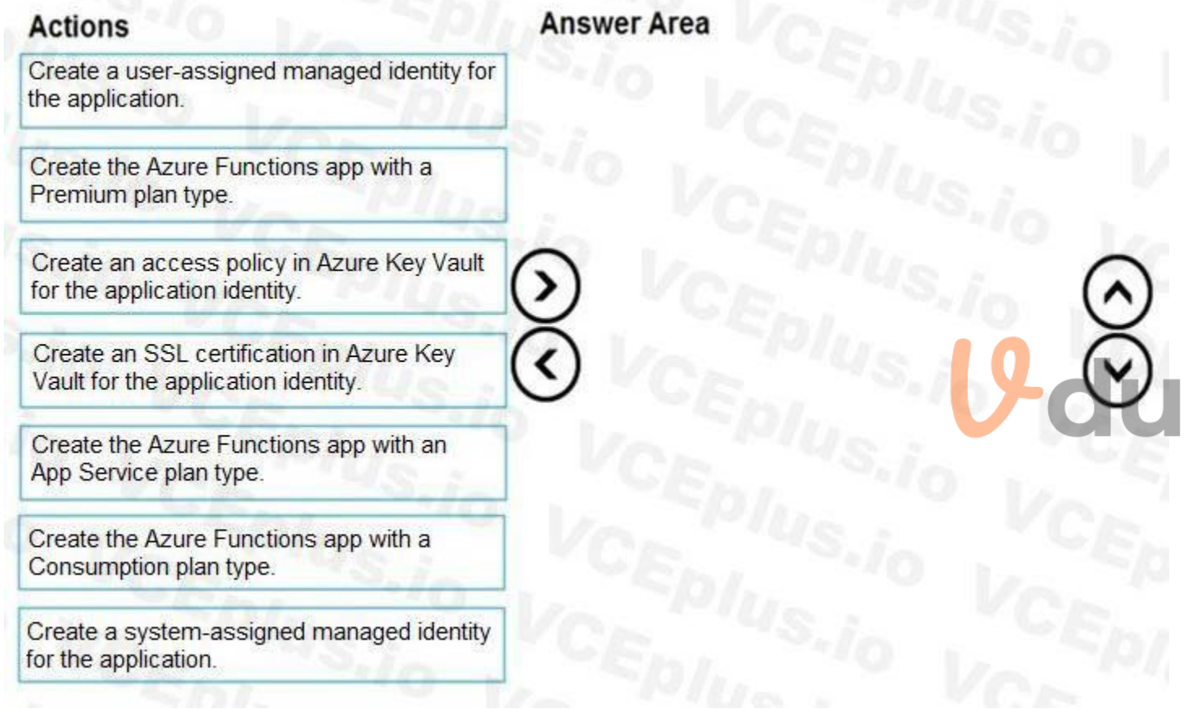


Section:
Explanation:
Step 1: #bin/bash
The appName is used when the webapp-name is created in step 2.
Step 2: az webapp config hostname add
The webapp-name is used when the webapp is created in step 3.
Step 3: az webapp create
Create a web app. In the Cloud Shell, create a web app in the myAppServicePlan App Service plan with the az webapp create command.
Step : az webapp confing container set
In Create a web app, you specified an image on Docker Hub in the az webapp create command. This is good enough for a public image. To use a private image, you need to configure your Docker account ID and password in your Azure web app.
In the Cloud Shell, follow the az webapp create command with az webapp config container set.
Reference:
https://docs.microsoft.com/en-us/azure/app-service/containers/tutorial-custom-docker-image

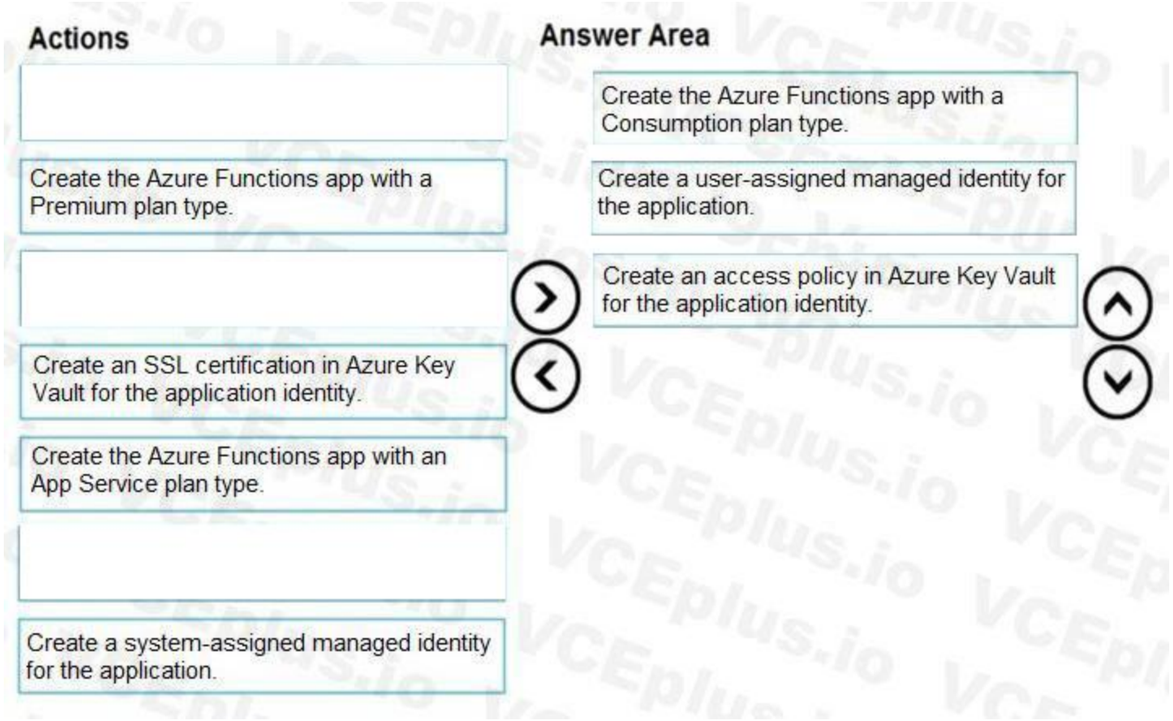
QUESTION 25

DRAG DROP
You are developing a serverless Java application on Azure. You create a new Azure Key Vault to work with secrets from a new Azure Functions application.
The application must meet the following requirements:
Reference the Azure Key Vault without requiring any changes to the Java code.
Dynamically add and remove instances of the Azure Functions host based on the number of incoming application events.
Ensure that instances are perpetually warm to avoid any cold starts.
Connect to a VNet.
Authentication to the Azure Key Vault instance must be removed if the Azure Function application is deleted.
You need to grant the Azure Functions application access to the Azure Key Vault.
Which three actions should you perform in sequence? To answer, 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:



Section:

Explanation:
Step 1: Create the Azure Functions app with a Consumption plan type.
Use the Consumption plan for serverless.
Step 2: Create a system-assigned managed identity for the application.
Create a system-assigned managed identity for your application.
Key Vault references currently only support system-assigned managed identities. User-assigned identities cannot be used.
Step 3: Create an access policy in Key Vault for the application identity.
Create an access policy in Key Vault for the application identity you created earlier. Enable the "Get" secret permission on this policy. Do not configure the "authorized application" or applicationId settings, as this is not compatible with a managed identity.
Reference:
https://docs.microsoft.com/en-us/azure/app-service/app-service-key-vault-references

QUESTION 26
You develop a website. You plan to host the website in Azure. You expect the website to experience high traffic volumes after it is published.
You must ensure that the website remains available and responsive while minimizing cost.
You need to deploy the website.
What should you do?

A. Deploy the website to a virtual machine. Configure the virtual machine to automatically scale when the CPU load is high.
B. Deploy the website to an App Service that uses the Shared service tier. Configure the App Service plan to automatically scale when the CPU load is high.
C. Deploy the website to a virtual machine. Configure a Scale Set to increase the virtual machine instance count when the CPU load is high.
D. Deploy the website to an App Service that uses the Standard service tier. Configure the App Service plan to automatically scale when the CPU load is high.

Correct Answer: D
Section:

Explanation:
Windows Azure Web Sites (WAWS) offers 3 modes: Standard, Free, and Shared.
Standard mode carries an enterprise-grade SLA (Service Level Agreement) of 99.9% monthly, even for sites with just one instance.
Standard mode runs on dedicated instances, making it different from the other ways to buy Windows Azure Web Sites.
Incorrect Answers:
B: Shared and Free modes do not offer the scaling flexibility of Standard, and they have some important limits.
Shared mode, just as the name states, also uses shared Compute resources, and also has a CPU limit. So, while neither Free nor Shared is likely to be the best choice for your production environment due to these limits.

QUESTION 27
HOTSPOT
A company is developing a Java web app. The web app code is hosted in a GitHub repository located at https://github.com/Contoso/webapp.
The web app must be evaluated before it is moved to production. You must deploy the initial code release to a deployment slot named staging.
You need to create the web app and deploy the code.
How should you complete the commands? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:

gitrepo=https://github.com/Contoso/webapp
webappname=businesswebapp
resourcegroupname=BusinessAppResourceGroup

az [▼] create --location centralus --name $resourcegroupname

- group
- webapp
- appservice plan
- webapp deployment slot
- webapp deployment source

az [▼] create --name $webappname --resource-group $resourcegroupname --sku S3

- group
- webapp
- appservice plan
- webapp deployment slot
- webapp deployment source

az [▼] create --name $webappname --resource-group $resourcegroupname --plan $webappname

- group
- webapp
- appservice plan
- webapp deployment slot
- webapp deployment source

az [▼] create --name $webappname --resource-group $resourcegroupname --slot staging

- group
- webapp
- appservice plan
- webapp deployment slot
- webapp deployment source

az [▼] config --name $webappname --resource-group $resourcegroupname \
--slot staging --repo-url $gitrepo --branch master --manual-integration

- group
- webapp
- appservice plan
- webapp deployment slot
- webapp deployment source

Answer Area:

gitrepo=https://github.com/Contoso/webapp
webappname=businesswebapp
resourcegroupname=BusinessAppResourceGroup

az [group / webapp / appservice plan / webapp deployment slot / webapp deployment source] create --location centralus --name $resourcegroupname

az [group / webapp / appservice plan / webapp deployment slot / webapp deployment source] create --name $webappname --resource-group $resourcegroupname --sku S3

az [group / webapp / appservice plan / webapp deployment slot / webapp deployment source] create --name $webappname --resource-group $resourcegroupname --plan $webappname

az [group / webapp / appservice plan / webapp deployment slot / webapp deployment source] create --name $webappname --resource-group $resourcegroupname --slot staging

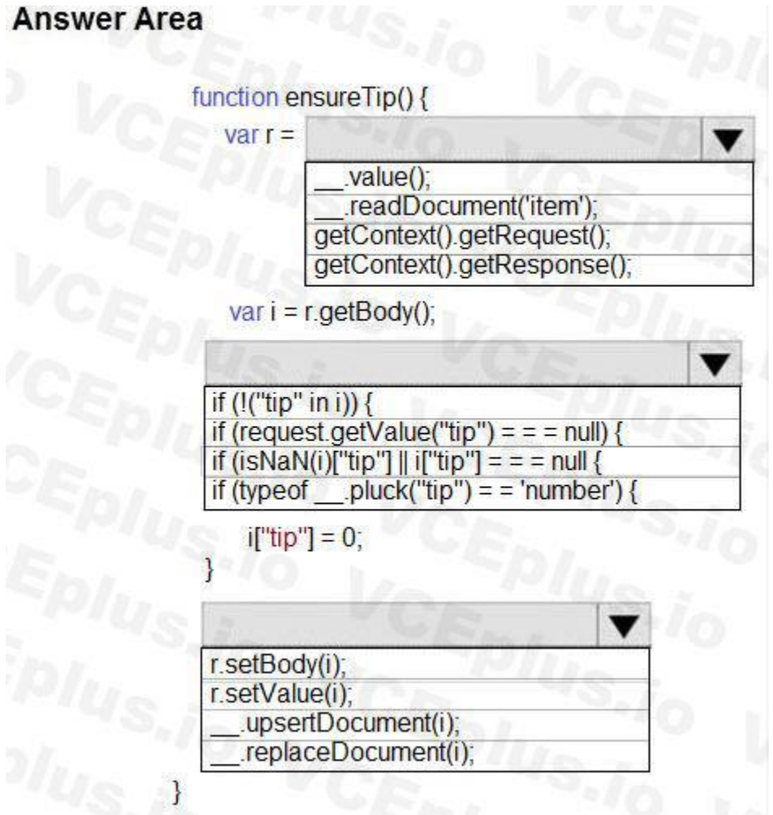
az [group / webapp / appservice plan / webapp deployment slot / webapp deployment source] config --name $webappname --resource-group $resourcegroupname \
--slot staging --repo-url $gitrepo --branch master --manual-integration

Section:
Explanation:
Box 1: group
Create a resource group.
az group create --location westeurope --name myResourceGroup
Box 2: appservice plan
Create an App Service plan in STANDARD tier (minimum required by deployment slots).
az appservice plan create --name $webappname --resource-group myResourceGroup --sku S1
Box 3: webapp
Create a web app.
az webapp create --name $webappname --resource-group myResourceGroup \
--plan $webappname
Box 4: webapp deployment slot
#Create a deployment slot with the name "staging".

az webapp deployment slot create --name $webappname --resource-group myResourceGroup \
--slot staging
Box 5: webapp deployment source
Deploy sample code to "staging" slot from GitHub.
az webapp deployment source config --name $webappname --resource-group myResourceGroup \
--slot staging --repo-url $gitrepo --branch master --manual-integration
Reference:
https://docs.microsoft.com/en-us/azure/app-service/scripts/cli-deploy-staging-environment

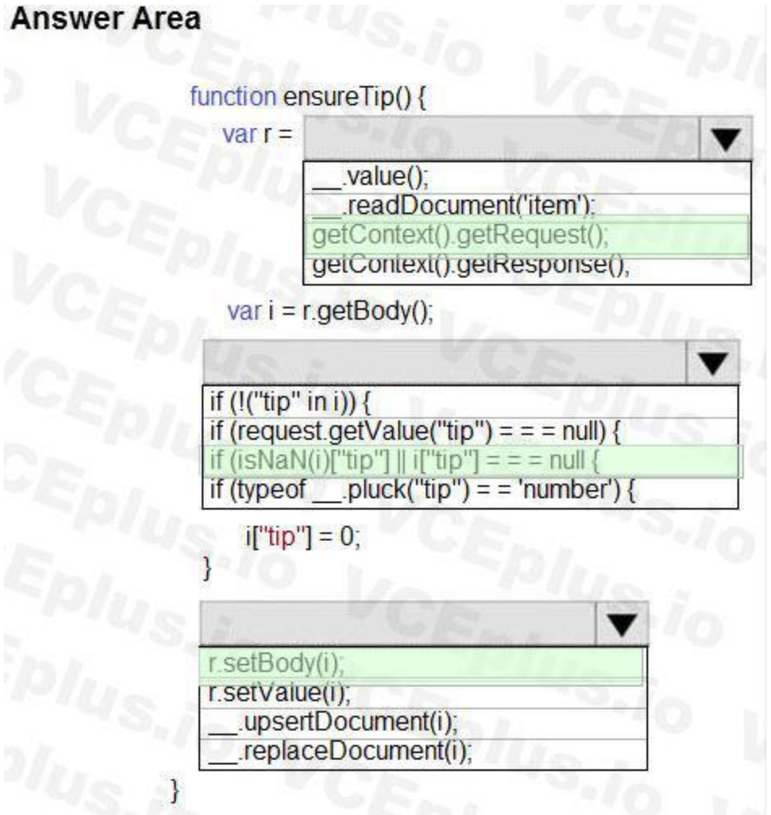
QUESTION 28
HOTSPOT
You have a web service that is used to pay for food deliveries. The web service uses Azure Cosmos DB as the data store.
You plan to add a new feature that allows users to set a tip amount. The new feature requires that a property named tip on the document in Cosmos DB must be present and contain a numeric value.
There are many existing websites and mobile apps that use the web service that will not be updated to set the tip property for some time.
How should you complete the trigger?
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:

Answer Area



Section:
Explanation:

QUESTION 29
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.
You develop an HTTP triggered Azure Function app to process Azure Storage blob data. The app is triggered using an output binding on the blob.
The app continues to time out after four minutes. The app must process the blob data.
You need to ensure the app does not time out and processes the blob data.
Solution: Use the Durable Function async pattern to process the blob data.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section:
Explanation:
Instead pass the HTTP trigger payload into an Azure Service Bus queue to be processed by a queue trigger function and return an immediate HTTP success response.
Note: Large, long-running functions can cause unexpected timeout issues. General best practices include:
Whenever possible, refactor large functions into smaller function sets that work together and return responses fast. For example, a webhook or HTTP trigger function might require an acknowledgment response within a certain time limit; it's common for webhooks to require an immediate response. You can pass the HTTP trigger payload into a queue to be processed by a queue trigger function. This approach lets you defer the actual work and return an immediate response.

Reference:
https://docs.microsoft.com/en-us/azure/azure-functions/functions-best-practices

QUESTION 30
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.
You develop an HTTP triggered Azure Function app to process Azure Storage blob data. The app is triggered using an output binding on the blob.
The app continues to time out after four minutes. The app must process the blob data.
You need to ensure the app does not time out and processes the blob data.
Solution: Pass the HTTP trigger payload into an Azure Service Bus queue to be processed by a queue trigger function and return an immediate HTTP success response.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: A
Section:
Explanation:
Large, long-running functions can cause unexpected timeout issues. General best practices include:
Whenever possible, refactor large functions into smaller function sets that work together and return responses fast. For example, a webhook or HTTP trigger function might require an acknowledgment response within a certain time limit; it's common for webhooks to require an immediate response. You can pass the HTTP trigger payload into a queue to be processed by a queue trigger function. This approach lets you defer the actual work and return an immediate response.
Reference:
https://docs.microsoft.com/en-us/azure/azure-functions/functions-best-practices

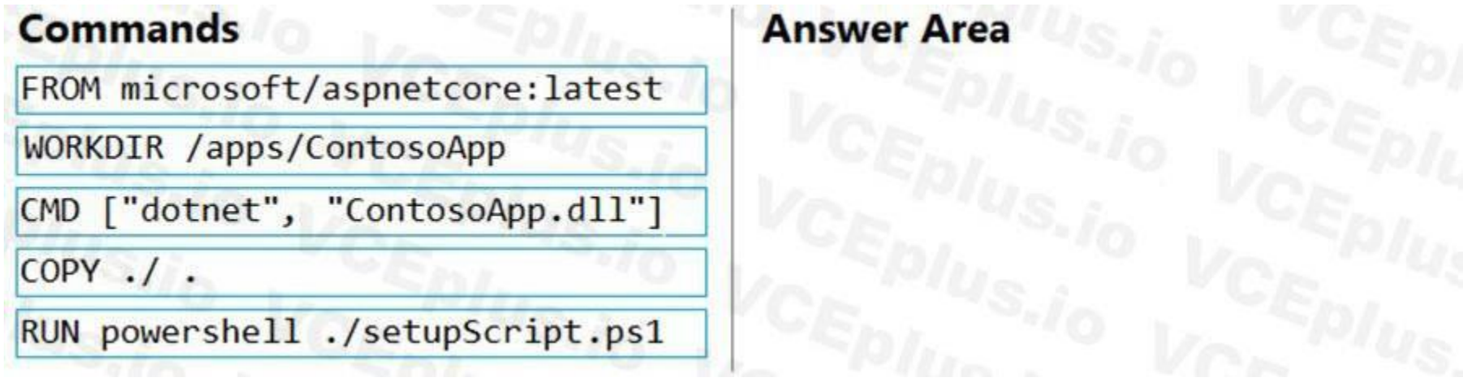
QUESTION 31
Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.
After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.
You develop an HTTP triggered Azure Function app to process Azure Storage blob data. The app is triggered using an output binding on the blob.
The app continues to time out after four minutes. The app must process the blob data.
You need to ensure the app does not time out and processes the blob data.
Solution: Configure the app to use an App Service hosting plan and enable the Always On setting.
Does the solution meet the goal?

A. Yes
B. No

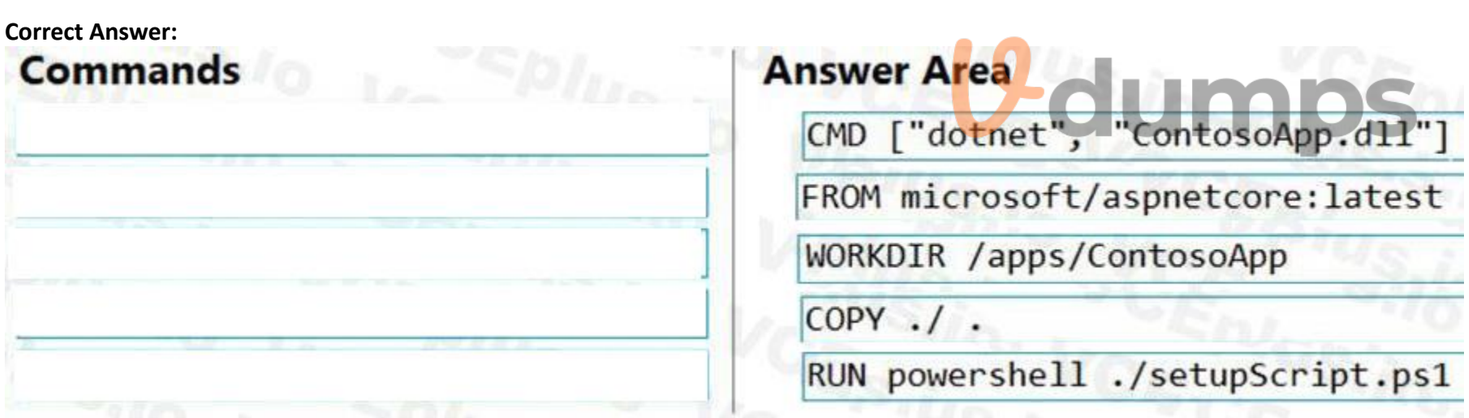
Correct Answer: B
Section:
Explanation:
Instead pass the HTTP trigger payload into an Azure Service Bus queue to be processed by a queue trigger function and return an immediate HTTP success response.
Note: Large, long-running functions can cause unexpected timeout issues. General best practices include:
Whenever possible, refactor large functions into smaller function sets that work together and return responses fast. For example, a webhook or HTTP trigger function might require an acknowledgment response within a certain time limit; it's common for webhooks to require an immediate response. You can pass the HTTP trigger payload into a queue to be processed by a queue trigger function. This approach lets you defer the actual work and return an immediate response.
Reference:
https://docs.microsoft.com/en-us/azure/azure-functions/functions-best-practices

QUESTION 32
DRAG DROP
You plan to create a Docker image that runs an ASP.NET Core application named ContosoApp. You have a setup script named setupScript.ps1 and a series of application files including ContosoApp.dll.
You need to create a Dockerfile document that meets the following requirements:
Call setupScripts.ps1 when the container is built.
Run ContosoApp.dll when the container starts.
The Dockerfile document must be created in the same folder where ContosoApp.dll and setupScript.ps1 are stored.
Which five commands should you use to develop the solution? To answer, move the appropriate commands from the list of commands to the answer area and arrange them in the correct order.

Select and Place:



Correct Answer:



Section:
Explanation:
Box 1: CMD [..]
Cmd starts a new instance of the command interpreter, Cmd.exe.
Syntax: CMD <string>
Specifies the command you want to carry out.
Box 2: FROM microsoft/aspnetcore-build:latest
Box 3: WORKDIR /apps/ContosoApp
Bxo 4: COPY ./ .
Box 5: RUN powershell ./setupScript.ps1

QUESTION 33
You are developing an Azure Function App that processes images that are uploaded to an Azure Blob container.
Images must be processed as quickly as possible after they are uploaded, and the solution must minimize latency. You create code to process images when the Function App is triggered.

You need to configure the Function App.
What should you do?

A. Use an App Service plan. Configure the Function App to use an Azure Blob Storage input trigger.
B. Use a Consumption plan. Configure the Function App to use an Azure Blob Storage trigger.
C. Use a Consumption plan. Configure the Function App to use a Timer trigger.
D. Use an App Service plan. Configure the Function App to use an Azure Blob Storage trigger.
E. Use a Consumption plan. Configure the Function App to use an Azure Blob Storage input trigger.

Correct Answer: B
Section:
Explanation:
The Blob storage trigger starts a function when a new or updated blob is detected. The blob contents are provided as input to the function.
The Consumption plan limits a function app on one virtual machine (VM) to 1.5 GB of memory.
Reference:
https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-storage-blob-trigger

QUESTION 34
HOTSPOT
You are configuring a new development environment for a Java application.
The environment requires a Virtual Machine Scale Set (VMSS), several storage accounts, and networking components.
The VMSS must not be created until the storage accounts have been successfully created and an associated load balancer and virtual network is configured.
How should you complete the Azure Resource Manager template? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

```
{
. . .
"resources": [
  {                                                    pyIn
    "apiVersion": "2016-01-01",
    "type": "Microsoft.Storage/storageAccounts",
    "name": "[concat(                                    (), 'storage', uniqueString(resourceGroup().id))]",
      "location": "[resourceGroup().location]",
      . . .
        "sku": {
        "name": "Standard_LRS"
      },
      "kind": "Storage",
      "properties": {},
      "                                                  ": {
        "name": "storagesetup",
        "count": 3
      }
    },
    {
      "apiVersion": "2015-06-15",
      "type": "Microsoft.Compute/virtualMachines",
      "name": "[concat('VM', uniqueString(resourceGroup().id))]",
      "                                                  ": [
        "[variables('loadBalancerName')]",
        "[variables('virtualNetworkName')]",
        "storagesetup",
        ],
      . . .
    }
],
"outputs": {}
}
```

copy
copyIndex
priority
dependsOn

copy
copyIndex
priority
dependsOn

copy
copyIndex
priority
dependsOn

Answer Area:

Answer Area

```
{
. . .
"resources": [
  {                                                    pyIn
    "apiVersion": "2016-01-01",
    "type": "Microsoft.Storage/storageAccounts",
    "name": "[concat(                                    (), 'storage', uniqueString(resourceGroup().id))]",
      "location": "[resourceGroup().location]",
      . . .
        "sku": {
        "name": "Standard_LRS"
      },
      "kind": "Storage",
      "properties": {},
      "                                                  ": {
        "name": "storagesetup",
        "count": 3
      }
    },
    {
      "apiVersion": "2015-06-15",
      "type": "Microsoft.Compute/virtualMachines",
      "name": "[concat('VM', uniqueString(resourceGroup().id))]",
      "                                                  ": [
        "[variables('loadBalancerName')]",
        "[variables('virtualNetworkName')]",
        "storagesetup",
        ],
      . . .
    }
],
"outputs": {}
}
```

copy
copyIndex
priority
dependsOn

copy
copyIndex
priority
dependsOn

copy
copyIndex
priority
dependsOn

Section:
Explanation:
Box 1: copyIndex
Notice that the name of each resource includes the copyIndex() function, which returns the current iteration in the loop. copyIndex() is zero-based.
Box 2: copy
By adding the copy element to the resources section of your template, you can dynamically set the number of resources to deploy.
Box 3: dependsOn
Example:
"type": "Microsoft.Compute/virtualMachineScaleSets",
"apiVersion": "2020-06-01",
"name": "[variables('namingInfix')]",
"location": "[parameters('location')]",
"sku": {
"name": "[parameters('vmSku')]",
"tier": "Standard",
"capacity": "[parameters('instanceCount')]"
},
"dependsOn": [
"[resourceId('Microsoft.Network/loadBalancers', variables('loadBalancerName'))]",
"[resourceId('Microsoft.Network/virtualNetworks', variables('virtualNetworkName'))]"
],
Reference:
https://docs.microsoft.com/en-us/azure/azure-resource-manager/templates/copy-resources
https://docs.microsoft.com/en-us/azure/virtual-machine-scale-sets/quick-create-template-windows

QUESTION 35
HOTSPOT
You are developing an Azure Function App by using Visual Studio. The app will process orders input by an Azure Web App. The web app places the order information into Azure Queue Storage.
You need to review the Azure Function App code shown below.

```
public static class OrderProcessor
{
  [FunctionName("ProcessOrders")]
  public static void ProcessOrders([QueueTrigger("incoming-orders")]CloudQueueMessage myQueueItem, [Table("Orders")]ICollector<Order> tableBindings, TraceWriter log)
  {
    log.Info($"Processing Order: {myQueueItem.Id}");
    log.Info($"Queue Insertion Time: {myQueueItem.InsertionTime}");
    log.Info($"Queue Expiration Time: {myQueueItem.ExpirationTime}");
    tableBindings.Add(JsonConvert.DeserializeObject<Order>(myQueueItem.AsString));
  }
  [FunctionName("ProcessOrders-Poison")]
  public static void ProcessFailedOrders([QueueTrigger("incoming-orders-poison")]CloudQueueMessage myQueueItem, TraceWriter log)
  {
    log.Error($"Failed to process order: {myQueueItem.AsString}");
    . . .
  }
}
```

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

	Yes	No
The code will log the time that the order was processed from the queue.	○	○
When the ProcessOrders function fails, the function will retry up to five times for a given order, including the first try.	○	○
When there are multiple orders in the queue, a batch of orders will be retrieved from the queue and the ProcessOrders function will run multiple instances concurrently to process the orders.	○	○
The ProcessOrders function will output the order to an Orders table in Azure Table Storage.	○	○

Answer Area:

Answer Area

	Yes	No
The code will log the time that the order was processed from the queue.	○	○
When the ProcessOrders function fails, the function will retry up to five times for a given order, including the first try.	○	○
When there are multiple orders in the queue, a batch of orders will be retrieved from the queue and the ProcessOrders function will run multiple instances concurrently to process the orders.	○	○
The ProcessOrders function will output the order to an Orders table in Azure Table Storage.	○	○

Section:

Explanation:

Box 1: No

ExpirationTime - The time that the message expires.

InsertionTime - The time that the message was added to the queue.

Box 2: Yes

maxDequeueCount - The number of times to try processing a message before moving it to the poison queue. Default value is 5.

Box 3: Yes

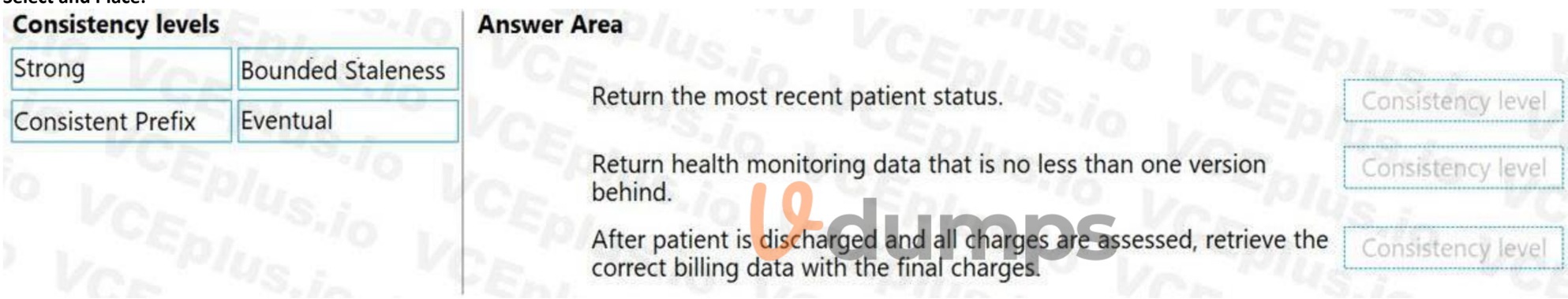
When there are multiple queue messages waiting, the queue trigger retrieves a batch of messages and invokes function instances concurrently to process them. By default, the batch size is 16. When the number being processed gets down to 8, the runtime gets another batch and starts processing those messages. So the maximum number of concurrent messages being processed per function on one virtual machine (VM) is 24.

Box 4: Yes

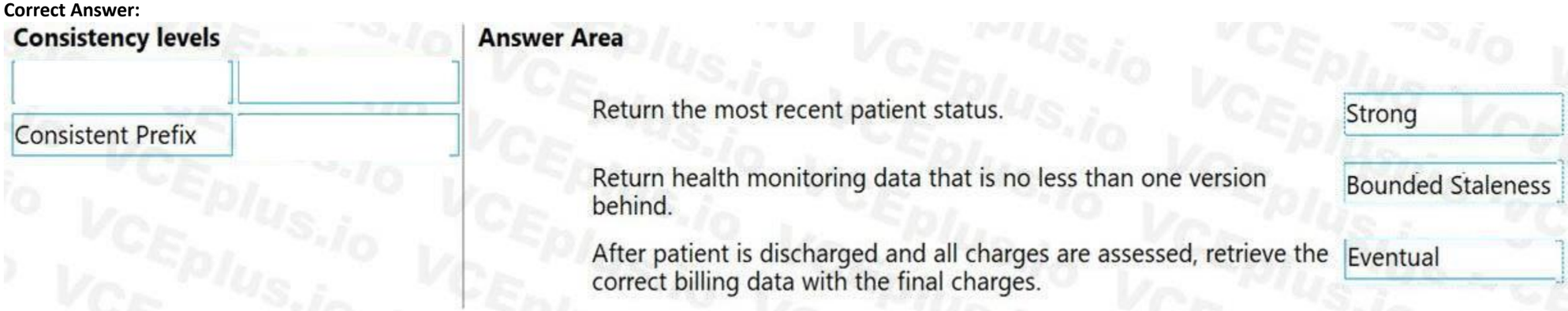
Reference:
https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-storage-queue

QUESTION 36
DRAG DROP
You are developing a solution for a hospital to support the following use cases:
The most recent patient status details must be retrieved even if multiple users in different locations have updated the patient record.
Patient health monitoring data retrieved must be the current version or the prior version.
After a patient is discharged and all charges have been assessed, the patient billing record contains the final charges.
You provision a Cosmos DB NoSQL database and set the default consistency level for the database account to Strong. You set the value for Indexing Mode to Consistent.
You need to minimize latency and any impact to the availability of the solution. You must override the default consistency level at the query level to meet the required consistency guarantees for the scenarios.
Which consistency levels should you implement? To answer, drag the appropriate consistency levels to the correct requirements. Each consistency level 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.
NOTE: Each correct selection is worth one point.

Select and Place:



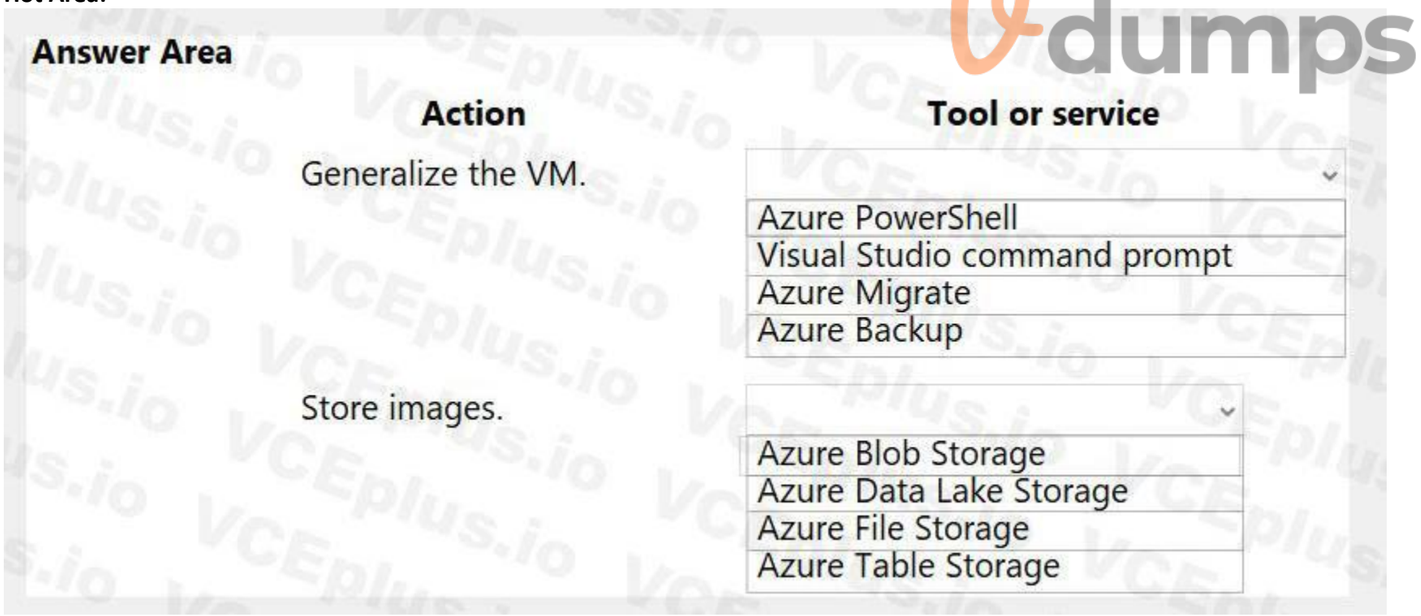
Correct Answer:



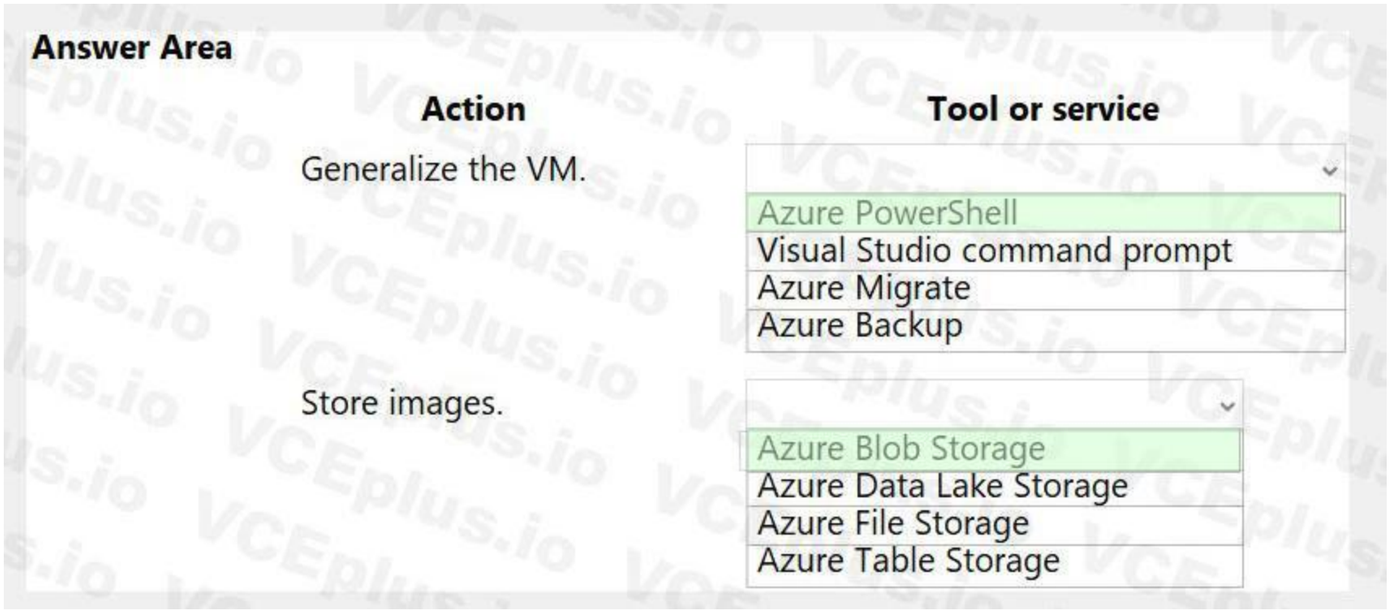
Section:
Explanation:
Box 1: Strong
Strong: Strong consistency offers a linearizability guarantee. The reads are guaranteed to return the most recent committed version of an item. A client never sees an uncommitted or partial write. Users are always guaranteed to read the latest committed write.
Box 2: Bounded staleness
Bounded staleness: The reads are guaranteed to honor the consistent-prefix guarantee. The reads might lag behind writes by at most "K" versions (that is "updates") of an item or by "t" time interval. When you choose bounded staleness, the "staleness" can be configured in two ways:
The number of versions (K) of the item

The time interval (t) by which the reads might lag behind the writes
Box 3: Eventual
Eventual: There's no ordering guarantee for reads. In the absence of any further writes, the replicas eventually converge.
Incorrect Answers:
Consistent prefix: Updates that are returned contain some prefix of all the updates, with no gaps. Consistent prefix guarantees that reads never see out-of-order writes.
Reference:
https://docs.microsoft.com/en-us/azure/cosmos-db/consistency-levels

QUESTION 37
HOTSPOT
You are configuring a development environment for your team. You deploy the latest Visual Studio image from the Azure Marketplace to your Azure subscription.
The development environment requires several software development kits (SDKs) and third-party components to support application development across the organization. You install and customize the deployed virtual machine (VM) for your development.HOTSPOT
You are configuring a development environment for your team. You deploy the latest Visual Studio image from the Azure Marketplace to your Azure subscription.
The development environment requires several software development kits (SDKs) and third-party components to support application development across the organization. You install and customize the deployed virtual machine (VM) for your development team. The customized VM must be saved to allow provisioning of a new team member development environment.
You need to save the customized VM for future provisioning.
Which tools or services should you use? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.
You need to save the customized VM for future provisioning.
Which tools or services should you use? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.
Hot Area:



Answer Area:



Section:
Explanation:
Box 1: Azure Powershell
Creating an image directly from the VM ensures that the image includes all of the disks associated with the VM, including the OS disk and any data disks.
Before you begin, make sure that you have the latest version of the Azure PowerShell module.
You use Sysprep to generalize the virtual machine, then use Azure PowerShell to create the image.
Box 2: Azure Blob Storage
You can store images in Azure Blob Storage.
Reference:
https://docs.microsoft.com/en-us/azure/virtual-machines/windows/capture-image-resource#create-an-image-of-a-vm-using-powershell

QUESTION 38
You are preparing to deploy a website to an Azure Web App from a GitHub repository. The website includes static content generated by a script.
You plan to use the Azure Web App continuous deployment feature.
You need to run the static generation script before the website starts serving traffic.
What are two possible ways to achieve this goal? Each correct answer presents a complete solution.
NOTE: Each correct selection is worth one point.

A. Add the path to the static content generation tool to WEBSITE_RUN_FROM_PACKAGE setting in the host.json file.
B. Add a PreBuild target in the websites csproj project file that runs the static content generation script.
C. Create a file named run.cmd in the folder /run that calls a script which generates the static content and deploys the website.
D. Create a file named .deployment in the root of the repository that calls a script which generates the static content and deploys the website.

Correct Answer: A, D
Section:
Explanation:
A: In Azure, you can run your functions directly from a deployment package file in your function app. The other option is to deploy your files in the d:\home\site\wwwroot directory of your function app (see A above).
To enable your function app to run from a package, you just add a WEBSITE_RUN_FROM_PACKAGE setting to your function app settings.
Note: The host.json metadata file contains global configuration options that affect all functions for a function app.
D: To customize your deployment, include a .deployment file in the repository root.

You just need to add a file to the root of your repository with the name .deployment and the content:
[config]
command = YOUR COMMAND TO RUN FOR DEPLOYMENT
this command can be just running a script (batch file) that has all that is required for your deployment, like copying files from the repository to the web root directory for example.
Reference:
https://github.com/projectkudu/kudu/wiki/Custom-Deployment-Script
https://docs.microsoft.com/bs-latn-ba/azure/azure-functions/run-functions-from-deployment-package

QUESTION 39
You are developing a web application that runs as an Azure Web App. The web application stores data in Azure SQL Database and stores files in an Azure Storage account. The web application makes HTTP requests to external services as part of normal operations.
The web application is instrumented with Application Insights. The external services are OpenTelemetry compliant.
You need to ensure that the customer ID of the signed in user is associated with all operations throughout the overall system.
What should you do?

A. Add the customer ID for the signed in user to the CorrelationContext in the web application
B. On the current SpanContext, set the TraceId to the customer ID for the signed in user
C. Set the header Ocp-Apim-Trace to the customer ID for the signed in user
D. Create a new SpanContext with the TraceFlags value set to the customer ID for the signed in user

Correct Answer: A
Section:
Explanation:
Reference:
https://docs.microsoft.com/en-us/azure/azure-monitor/app/correlation

01 - Implement Azure security
Case study
This is a case study. Case studies are not timed separately. You can use as much exam time as you would like to complete each case. However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.
To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other questions in this case study.
At the end of this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.
To start the case study
To display the first question in this case study, click the Next button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. When you are ready to answer a question, click the Question button to return to the question.
Background
Overview
You are a developer for Contoso, Ltd. The company has a social networking website that is developed as a Single Page Application (SPA). The main web application for the social networking website loads user uploaded content from blob storage.
You are developing a solution to monitor uploaded data for inappropriate content. The following process occurs when users upload content by using the SPA:
• Messages are sent to ContentUploadService.
• Content is processed by ContentAnalysisService.
• After processing is complete, the content is posted to the social network or a rejection message is posted in its place.
The ContentAnalysisService is deployed with Azure Container Instances from a private Azure Container Registry named contosoimages.
The solution will use eight CPU cores.
Azure Active Directory
Contoso, Ltd. uses Azure Active Directory (Azure AD) for both internal and guest accounts.

Requirements
ContentAnalysisService
The company's data science group built ContentAnalysisService which accepts user generated content as a string and returns a probable value for inappropriate content. Any values over a specific threshold must be reviewed by an employee of Contoso, Ltd.
You must create an Azure Function named CheckUserContent to perform the content checks.
Costs
You must minimize costs for all Azure services.
Manual review
To review content, the user must authenticate to the website portion of the ContentAnalysisService using their Azure AD credentials. The website is built using React and all pages and API endpoints require authentication. In order to review content a user must be part of a ContentReviewer role. All completed reviews must include the reviewer's email address for auditing purposes.
High availability
All services must run in multiple regions. The failure of any service in a region must not impact overall application availability.
Monitoring
An alert must be raised if the ContentUploadService uses more than 80 percent of available CPU cores.
Security
You have the following security requirements:
Any web service accessible over the Internet must be protected from cross site scripting attacks.
All websites and services must use SSL from a valid root certificate authority.
Azure Storage access keys must only be stored in memory and must be available only to the service.
All Internal services must only be accessible from internal Virtual Networks (VNets).
All parts of the system must support inbound and outbound traffic restrictions.
All service calls must be authenticated by using Azure AD.
User agreements
When a user submits content, they must agree to a user agreement. The agreement allows employees of Contoso, Ltd. to review content, store cookies on user devices, and track user's IP addresses.
Information regarding agreements is used by multiple divisions within Contoso, Ltd.
User responses must not be lost and must be available to all parties regardless of individual service uptime. The volume of agreements is expected to be in the millions per hour.
Validation testing
When a new version of the ContentAnalysisService is available the previous seven days of content must be processed with the new version to verify that the new version does not significantly deviate from the old version.
Issues
Users of the ContentUploadService report that they occasionally see HTTP 502 responses on specific pages.
Code
ContentUploadService

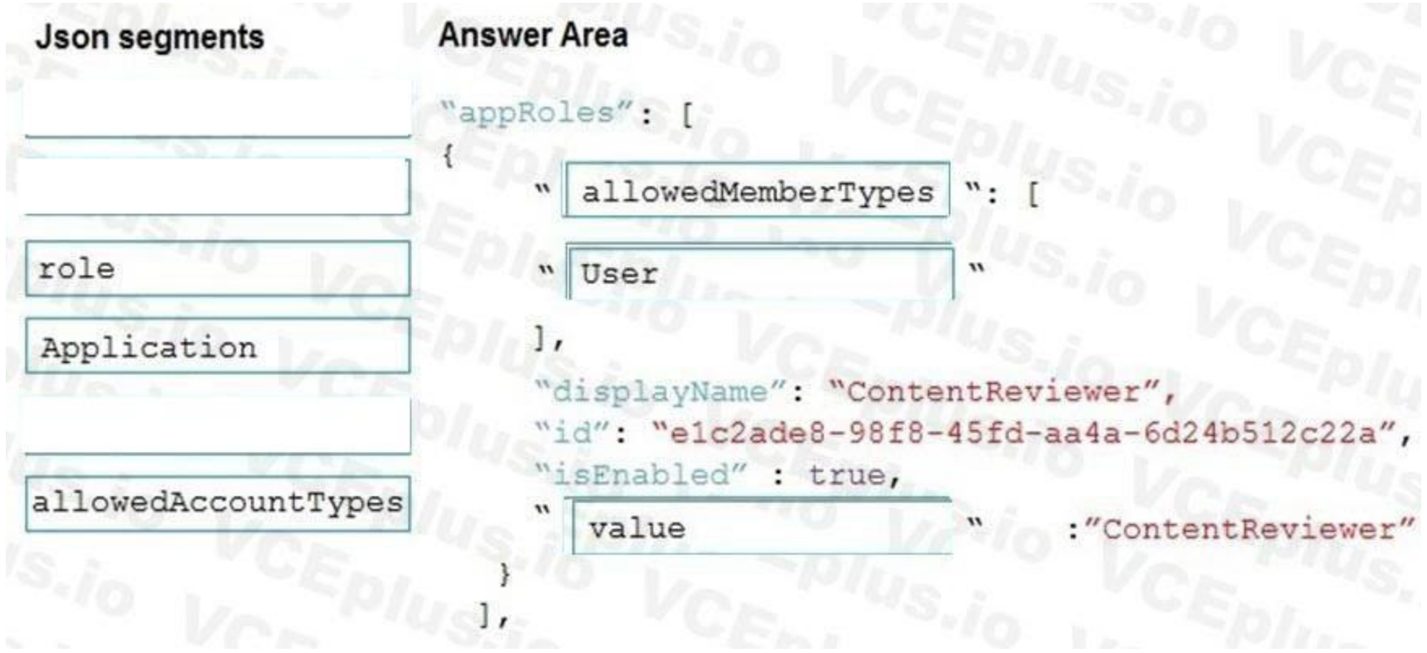
```
apiVersion: '2018-10-01'
type: Microsoft.ContainerInstance/containerGroups
location: westus
name: contentUploadService
properties:
    containers:
    - name: service
        properties:
        image: contoso/contentUploadService:latest
        ports:
        - port: 80
          protocol: TCP
        resources:
          requests:
            cpu: 1.0
            memoryInGB: 1.5

ipAddress:
    ip: 10.23.121.112
    ports:
      - port: 80
       protocol: TCP


networkProfile:

id: /subscriptions/98...19/resourceGroups/container/providers/Microsoft.Network/networkProfiles/subnet
```

```
{
    "id" : "2b079f03-9b06-2d44-98bb-e9182901fcb6",
    "appId" : "7118a7f0-b5c2-4c9d-833c-3d711396fe65",

    "createdDateTime" : "2019-12-24T06:01:44Z",
    "logoUrl" : null,
    "logoutUrl" : null,
    "name" : "ContentAnalysisService",


    "orgRestrictions" : [],
    "parentalControlSettings" : {
     "countriesBlockedForMinors" : [],
      "legalAgeGroupRule" : "Allow"
    },
    "passwordCredentials" : []
}
```

QUESTION 1
DRAG DROP
You need to add markup at line AM04 to implement the ContentReview role.
How should you complete the markup? To answer, drag the appropriate json segments to the correct locations. Each json 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.
NOTE: Each correct selection is worth one point.

Select and Place:

Correct Answer:

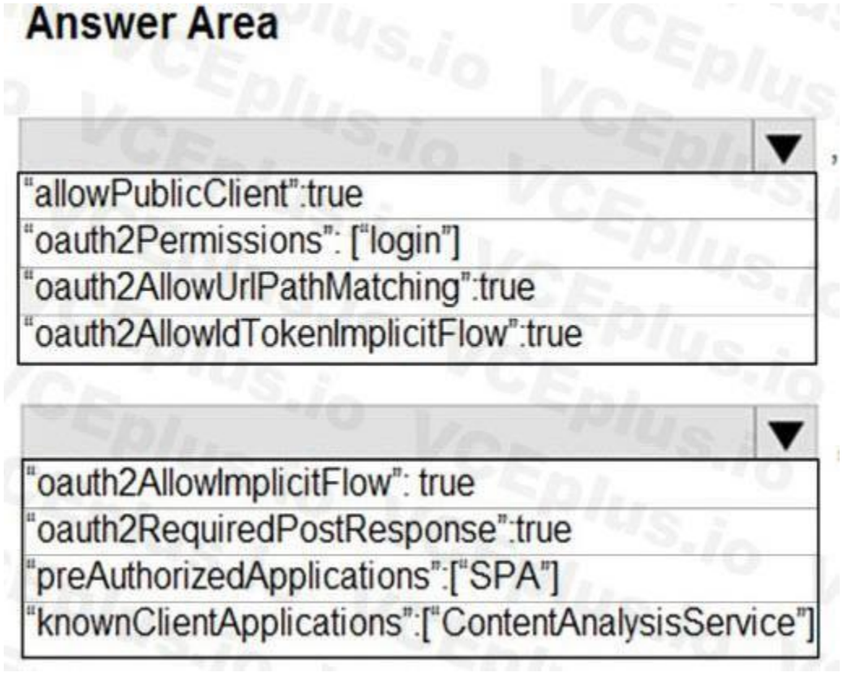


Section:
Explanation:
Box 1: allowedMemberTypes
allowedMemberTypes specifies whether this app role definition can be assigned to users and groups by setting to "User", or to other applications (that are accessing this application in daemon service scenarios) by setting to "Application", or to both.
Note: The following example shows the appRoles that you can assign to users.
"appId": "8763f1c4-f988-489c-a51e-158e9ef97d6a",
"appRoles": [
{
"allowedMemberTypes": [
"User"
],
"displayName": "Writer",
"id": "d1c2ade8-98f8-45fd-aa4a-6d06b947c66f",
"isEnabled": true,
"description": "Writers Have the ability to create tasks.",
"value": "Writer"
}
],
"availableToOtherTenants": false,
Box 2: User
Scenario: In order to review content a user must be part of a ContentReviewer role.
Box 3: value
value specifies the value which will be included in the roles claim in authentication and access tokens.
Reference:
https://docs.microsoft.com/en-us/graph/api/resources/approle

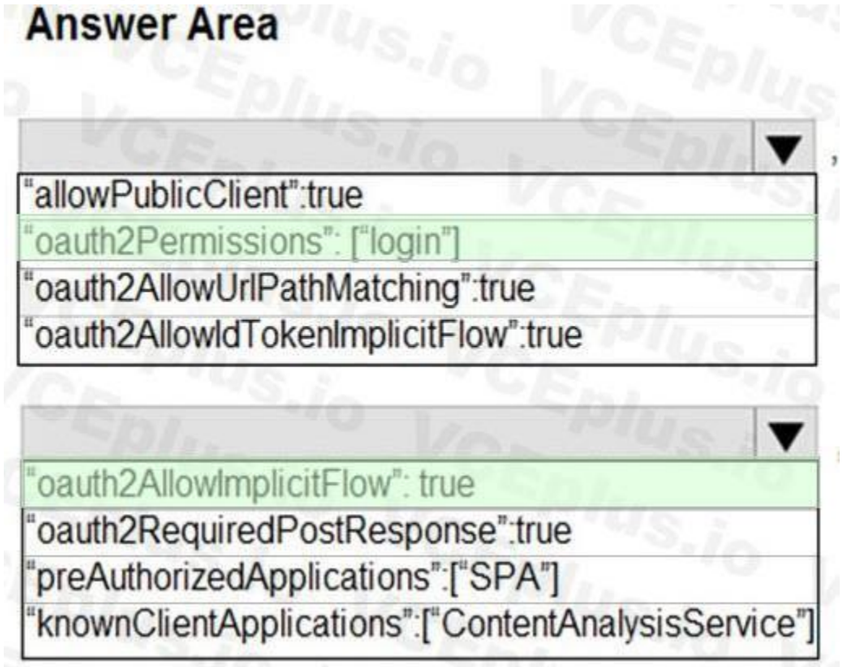
QUESTION 2
HOTSPOT

You need to add code at line AM09 to ensure that users can review content using ContentAnalysisService.
How should you complete the code? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:

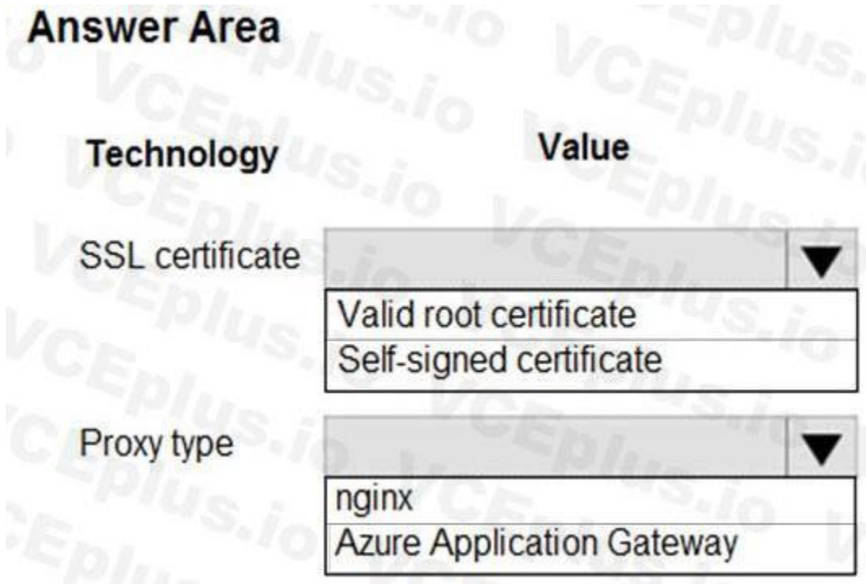


Section:

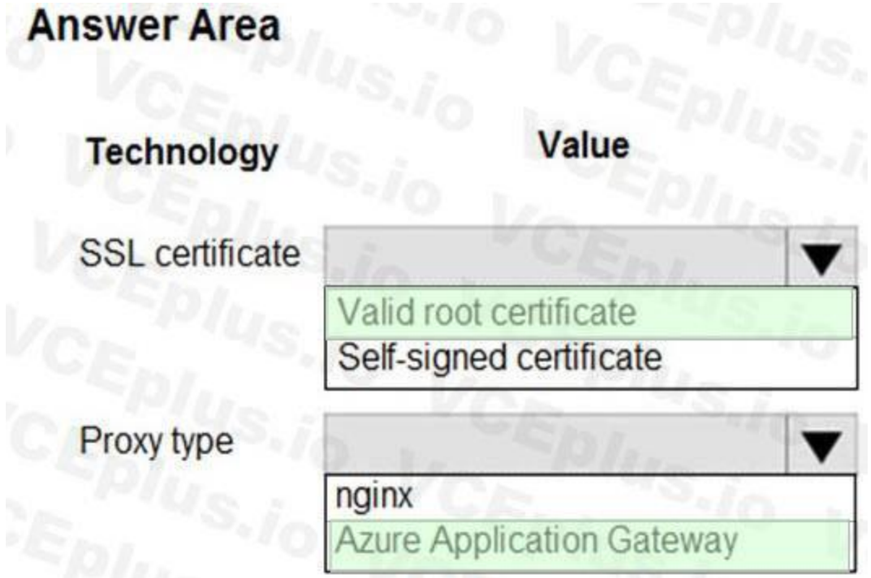
Explanation:
Box 1: "oauth2Permissions": ["login"]
oauth2Permissions specifies the collection of OAuth 2.0 permission scopes that the web API (resource) app exposes to client apps. These permission scopes may be granted to client apps during consent.
Box 2: "oauth2AllowImplicitFlow":true
For applications (Angular, Ember.js, React.js, and so on), Microsoft identity platform supports the OAuth 2.0 Implicit Grant flow.
Reference:
https://docs.microsoft.com/en-us/azure/active-directory/develop/reference-app-manifest

QUESTION 3
HOTSPOT
You need to ensure that network security policies are met.
How should you configure network security? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



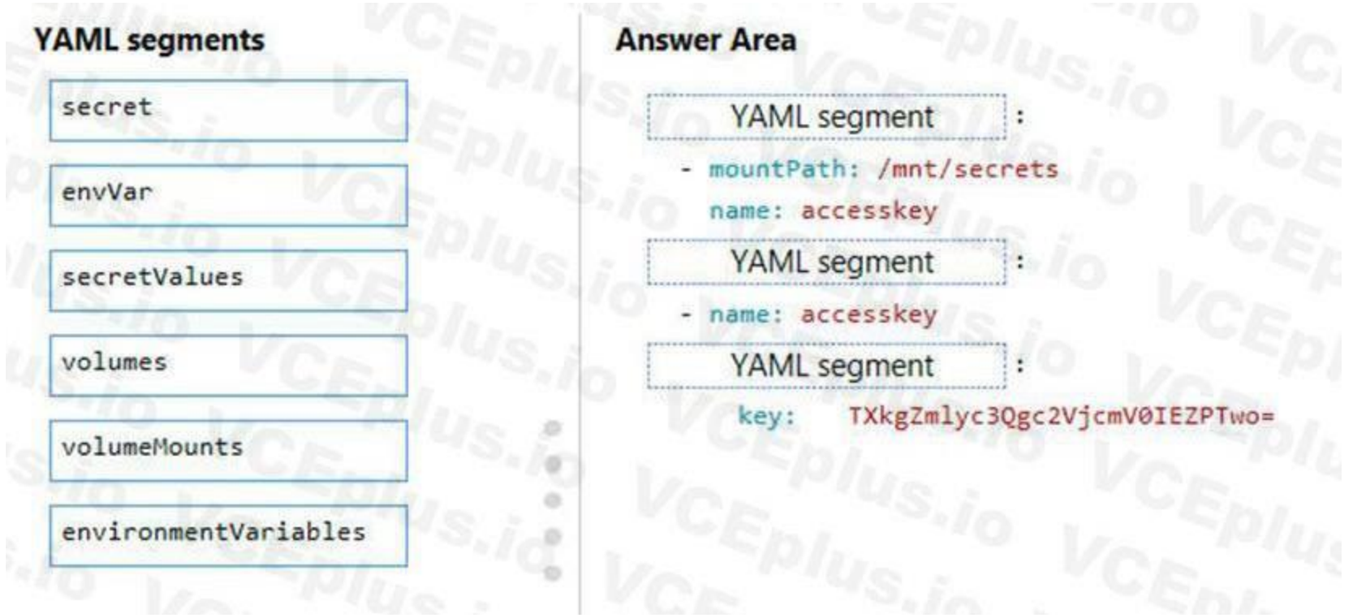
Answer Area:



Section:
Explanation:
Box 1: Valid root certificate
Scenario: All websites and services must use SSL from a valid root certificate authority.
Box 2: Azure Application Gateway
Scenario:
Any web service accessible over the Internet must be protected from cross site scripting attacks.
All Internal services must only be accessible from Internal Virtual Networks (VNets)
All parts of the system must support inbound and outbound traffic restrictions.
Azure Web Application Firewall (WAF) on Azure Application Gateway provides centralized protection of your web applications from common exploits and vulnerabilities. Web applications are increasingly targeted by malicious attacks that exploit commonly known vulnerabilities. SQL injection and cross-site scripting are among the most common attacks.
Application Gateway supports autoscaling, SSL offloading, and end-to-end SSL, a web application firewall (WAF), cookie-based session affinity, URL path-based routing, multisite hosting, redirection, rewrite HTTP headers and other features.
Note: Both Nginx and Azure Application Gateway act as a reverse proxy with Layer 7 load-balancing features plus a WAF to ensure strong protection against common web vulnerabilities and exploits.
You can modify Nginx web server configuration/SSL for X-XSS protection. This helps to prevent cross-site scripting exploits by forcing the injection of HTTP headers with X-XSS protection.
Reference:
https://docs.microsoft.com/en-us/azure/web-application-firewall/ag/ag-overview
https://www.upguard.com/articles/10-tips-for-securing-your-nginx-deployment

QUESTION 4
DRAG DROP
You need to add YAML markup at line CS17 to ensure that the ContentUploadService can access Azure Storage access keys.
How should you complete the YAML markup? To answer, drag the appropriate YAML segments to the correct locations. Each YAML 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.
NOTE: Each correct selection is worth one point.

Select and Place:



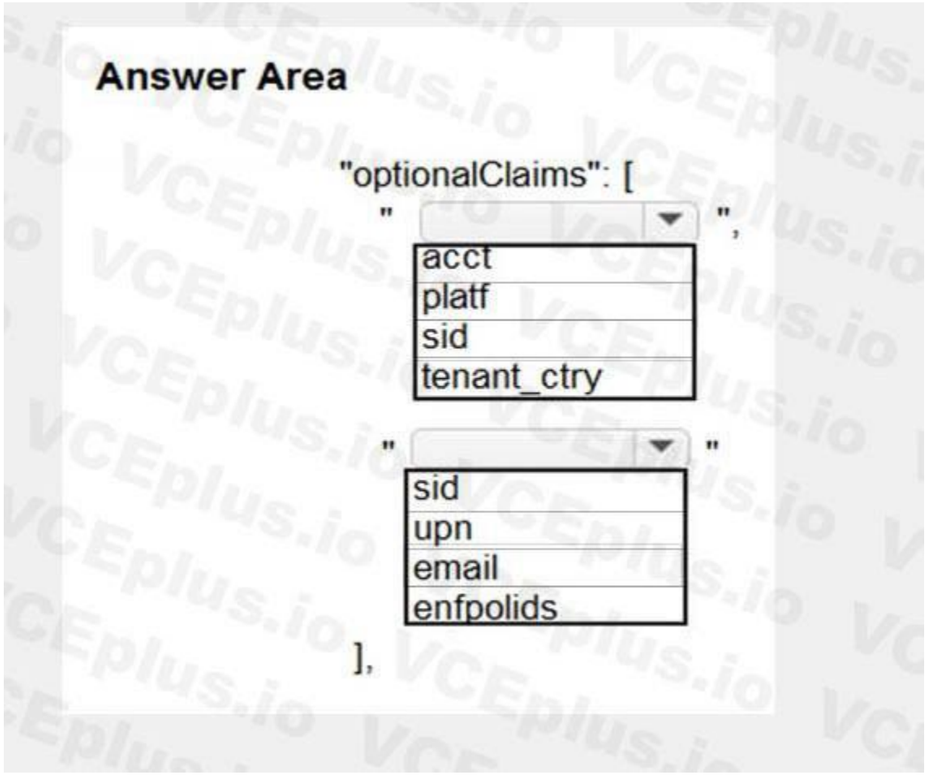
Correct Answer:

Section:
Explanation:
Box 1: volumeMounts
Example:
volumeMounts:
- mountPath: /mnt/secrets
name: secretvolume1
volumes:
- name: secretvolume1
secret:

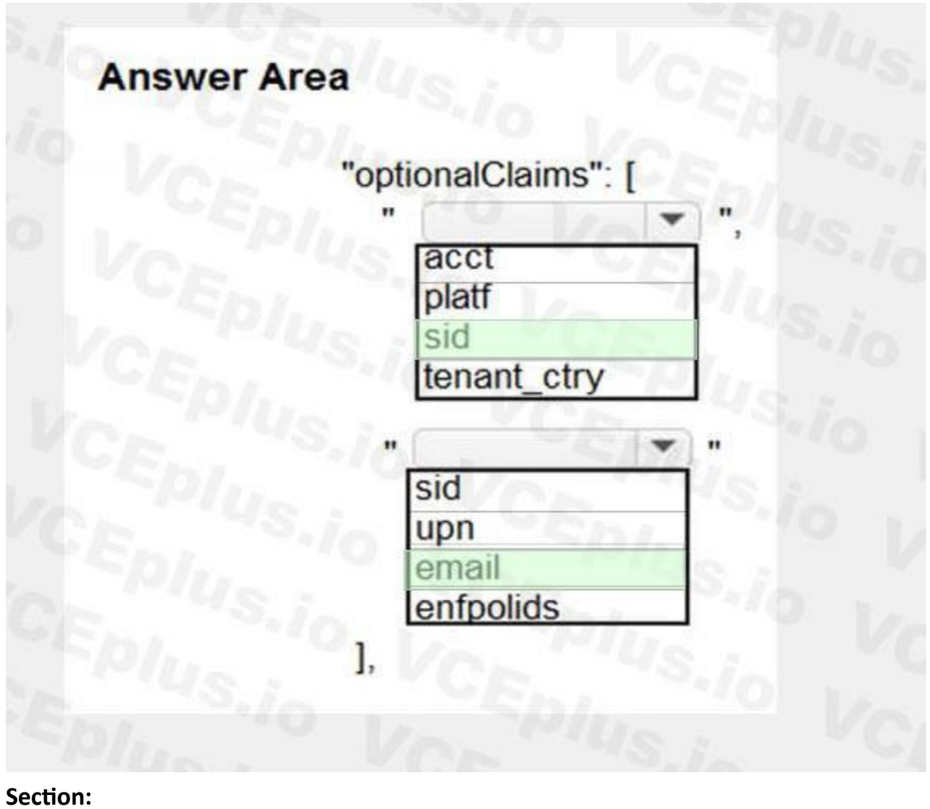
mysecret1: TXkgZmlyc3Qgc2VjcmV0IEZPTwo=
Box 2: volumes
Box 3: secret
Reference:
https://docs.microsoft.com/en-us/azure/container-instances/container-instances-volume-secret

QUESTION 5
HOTSPOT
You need to add code at line AM10 of the application manifest to ensure that the requirement for manually reviewing content can be met.
How should you complete the code? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



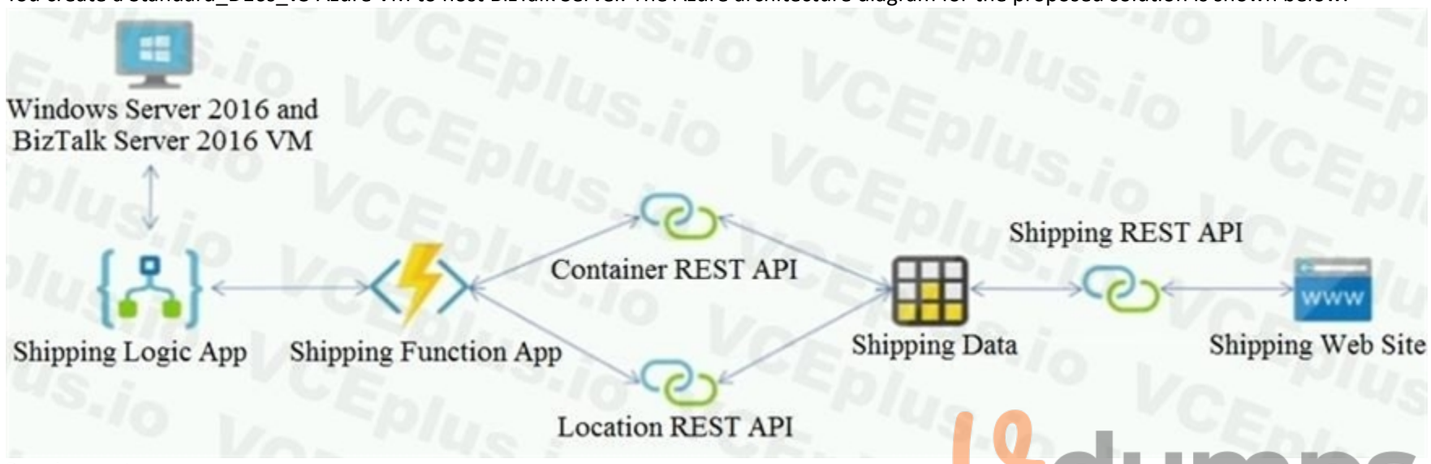
Answer Area:



Section:
Explanation:
Box 1: sid
Sid: Session ID, used for per-session user sign-out. Personal and Azure AD accounts.
Scenario: Manual review
To review content, the user must authenticate to the website portion of the ContentAnalysisService using their Azure AD credentials. The website is built using React and all pages and API endpoints require authentication. In order to review content a user must be part of a ContentReviewer role.
Box 2: email
Scenario: All completed reviews must include the reviewer's email address for auditing purposes.

02 - Implement Azure security
Case study
This is a case study. Case studies are not timed separately. You can use as much exam time as you would like to complete each case. However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.
To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other questions in this case study.
At the end of this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.
To start the case study
To display the first question in this case study, click the Next button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. When you are ready to answer a question, click the Question button to return to the question.
Current environment
Windows Server 2016 virtual machine
This virtual machine (VM) runs BizTalk Server 2016. The VM runs the following workflows:
Ocean Transport - This workflow gathers and validates container information including container contents and arrival notices at various shipping ports.
Inland Transport - This workflow gathers and validates trucking information including fuel usage, number of stops, and routes.

The VM supports the following REST API calls:
Container API - This API provides container information including weight, contents, and other attributes.
Location API - This API provides location information regarding shipping ports of call and trucking stops.
Shipping REST API - This API provides shipping information for use and display on the shipping website.
Shipping Data
The application uses MongoDB JSON document storage database for all container and transport information.
Shipping Web Site
The site displays shipping container tracking information and container contents. The site is located at http://shipping.wideworldimporters.com/
Proposed solution
The on-premises shipping application must be moved to Azure. The VM has been migrated to a new Standard_D16s_v3 Azure VM by using Azure Site Recovery and must remain running in Azure to complete the BizTalk component migrations.
You create a Standard_D16s_v3 Azure VM to host BizTalk Server. The Azure architecture diagram for the proposed solution is shown below:



Requirements
Shipping Logic app
The Shipping Logic app must meet the following requirements:
Support the ocean transport and inland transport workflows by using a Logic App.
Support industry-standard protocol X12 message format for various messages including vessel content details and arrival notices.
Secure resources to the corporate VNet and use dedicated storage resources with a fixed costing model.
Maintain on-premises connectivity to support legacy applications and final BizTalk migrations.
Shipping Function app
Implement secure function endpoints by using app-level security and include Azure Active Directory (Azure AD).
REST APIs
The REST API's that support the solution must meet the following requirements:
Secure resources to the corporate VNet.
Allow deployment to a testing location within Azure while not incurring additional costs.
Automatically scale to double capacity during peak shipping times while not causing application downtime.
Minimize costs when selecting an Azure payment model.
Shipping data
Data migration from on-premises to Azure must minimize costs and downtime.
Shipping website
Use Azure Content Delivery Network (CDN) and ensure maximum performance for dynamic content while minimizing latency and costs.
Issues
Windows Server 2016 VM
The VM shows high network latency, jitter, and high CPU utilization. The VM is critical and has not been backed up in the past. The VM must enable a quick restore from a 7-day snapshot to include in-place restore of disks in case of failure.
Shipping website and REST APIs
The following error message displays while you are testing the website:
Failed to load http://test-shippingapi.wideworldimporters.com/: No 'Access-Control-Allow-Origin' header is present on the requested resource. Origin 'http:// test.wideworldimporters.com/' is therefore not allowed access.

QUESTION 1

You need to secure the Shipping Logic App.
What should you use?

A. Azure App Service Environment (ASE)
B. Integration Service Environment (ISE)
C. VNet service endpoint
D. Azure AD B2B integration

Correct Answer: B
Section:
Explanation:
Scenario: The Shipping Logic App requires secure resources to the corporate VNet and use dedicated storage resources with a fixed costing model.
You can access to Azure Virtual Network resources from Azure Logic Apps by using integration service environments (ISEs).
Sometimes, your logic apps and integration accounts need access to secured resources, such as virtual machines (VMs) and other systems or services, that are inside an Azure virtual network. To set up this access, you can create an integration service environment (ISE) where you can run your logic apps and create your integration accounts.
Reference: https://docs.microsoft.com/en-us/azure/logic-apps/connect-virtual-network-vnet-isolated-environment-overview

QUESTION 2
HOTSPOT
You need to secure the Shipping Function app.
How should you configure the app? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

Setting	Value
Authorization level	Function Anonymous Admin
User claims	JSON Web Token (JWT) Shared Access Signature (SAS) token API Key
Trigger type	blob HTTP queue timer

Answer Area:

Answer Area

Setting	Value
Authorization level	Function / Anonymous / Admin
User claims	JSON Web Token (JWT) / Shared Access Signature (SAS) token / API Key
Trigger type	blob / HTTP / queue / timer

Section:
Explanation:
Scenario: Shipping Function app: Implement secure function endpoints by using app-level security and include Azure Active Directory (Azure AD).
Box 1: Function
Box 2: JSON based Token (JWT)
Azure AD uses JSON based tokens (JWTs) that contain claims
Box 3: HTTP
How a web app delegates sign-in to Azure AD and obtains a token
User authentication happens via the browser. The OpenID protocol uses standard HTTP protocol messages.
Reference:
https://docs.microsoft.com/en-us/azure/active-directory/develop/authentication-scenarios

03 - Implement Azure security
Case study
This is a case study. Case studies are not timed separately. You can use as much exam time as you would like to complete each case. However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.
To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other questions in this case study.
At the end of this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.
To start the case study
To display the first question in this case study, click the Next button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such

as business requirements, existing environment, and problem statements. When you are ready to answer a question, click the Question button to return to the question.

Background

City Power & Light company provides electrical infrastructure monitoring solutions for homes and businesses. The company is migrating solutions to Azure.

Current environment

Architecture overview

The company has a public website located at http://www.cpandl.com/. The site is a single-page web application that runs in Azure App Service on Linux. The website uses files stored in Azure Storage and cached in Azure Content Delivery Network (CDN) to serve static content.

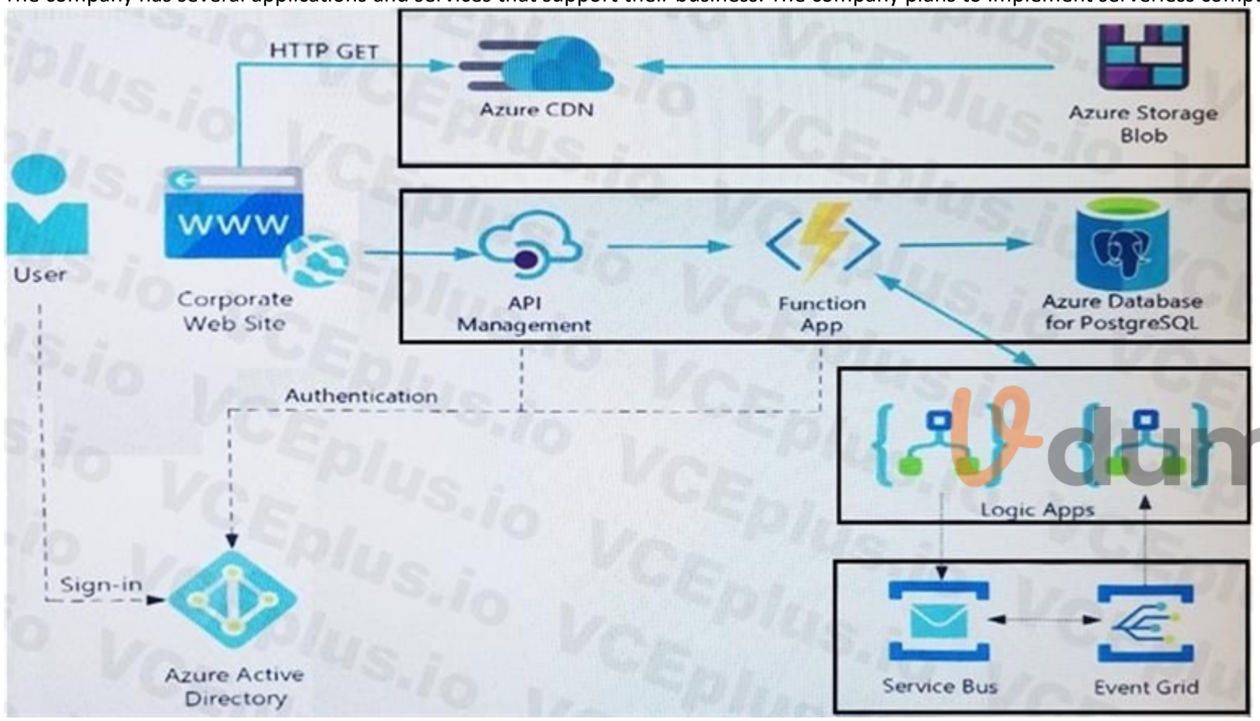
API Management and Azure Function App functions are used to process and store data in Azure Database for PostgreSQL. API Management is used to broker communications to the Azure Function app functions for Logic app integration.

Logic apps are used to orchestrate the data processing while Service Bus and Event Grid handle messaging and events.

The solution uses Application Insights, Azure Monitor, and Azure Key Vault.

Architecture diagram

The company has several applications and services that support their business. The company plans to implement serverless computing where possible. The overall architecture is shown below.



User authentication

The following steps detail the user authentication process:

The user selects Sign in in the website.

The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.

The user signs in.

Azure AD redirects the user's session back to the web application. The URL includes an access token.

The web application calls an API and includes the access token in the authentication header. The application ID is sent as the audience ('aud') claim in the access token.

The back-end API validates the access token.

Requirements

Corporate website

Communications and content must be secured by using SSL.

Communications must use HTTPS.

Data must be replicated to a secondary region and three availability zones.

Data storage costs must be minimized.

Azure Database for PostgreSQL

The database connection string is stored in Azure Key Vault with the following attributes:

Azure Key Vault name: cpandlkeyvault
Secret name: PostgreSQLConn
Id: 80df3e46ffcd4f1cb187f79905e9a1e8
The connection information is updated frequently. The application must always use the latest information to connect to the database.
Azure Service Bus and Azure Event Grid
Azure Event Grid must use Azure Service Bus for queue-based load leveling.
Events in Azure Event Grid must be routed directly to Service Bus queues for use in buffering.
Events from Azure Service Bus and other Azure services must continue to be routed to Azure Event Grid for processing.
Security
All SSL certificates and credentials must be stored in Azure Key Vault.
File access must restrict access by IP, protocol, and Azure AD rights.
All user accounts and processes must receive only those privileges which are essential to perform their intended function.
Compliance
Auditing of the file updates and transfers must be enabled to comply with General Data Protection Regulation (GDPR). The file updates must be read-only, stored in the order in which they occurred, include only create, update, delete, and copy operations, and be retained for compliance reasons.
Issues
Corporate website
While testing the site, the following error message displays:
CryptographicException: The system cannot find the file specified.
Function app
You perform local testing for the RequestUserApproval function. The following error message displays:
'Timeout value of 00:10:00 exceeded by function: RequestUserApproval'
The same error message displays when you test the function in an Azure development environment when you run the following Kusto query:
FunctionAppLogs
| where FunctionName = = "RequestUserApproval"
Logic app
You test the Logic app in a development environment. The following error message displays:
'400 Bad Request'
Troubleshooting of the error shows an HttpTrigger action to call the RequestUserApproval function.
Code
Corporate website
Security.cs:

```
SC01 public class Security
SC02 {
SC03 var bytes = System.IO.File.ReadAllBytes("~/var/ssl/private");
SC04 var cert = new System.Security.Cryptography.X509Certificate2(bytes);
SC05 var certName = cert.FriendlyName;
SC06 }
```

Function app
RequestUserApproval.cs:

```
RA01 public static class RequestUserApproval
RA02 {
RA03 [FunctionName("RequestUserApproval")]
RA04 public static async Task<IActionResult> Run(
RA05 [HttpTrigger(AuthorizationLevel.Function, "get", "post", Route = null)] HttpRequest req.
ILogger log)
RA06 {
RA07    log.LogInformation("RequestUserApproval function processed a request.");
RA08 ...
RA09 return ProcessRequest(req)
RA10    ? (ActionResult)new OkObjectResult($"User approval processed")
RA11    : new BadRequestObjectResult("Failed to process user approval");
RA12 }
RA13 private static bool ProcessRequest(HttpRequest req)
RA14 {
RA15    ...
RA16 }
RA17}
```

QUESTION 1
HOTSPOT
You need to retrieve the database connection string.
Which values should you use? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

REST API Endpoint:

https:// [▼] .vault.azure.net/secrets/ [▼] /

cpandlkeyvault
PostgreSQLConn
80df3e46ffcd4f1cb187f79905e9a1e8

Variable type to access Azure Key Vault secret values:

[▼]

Environment
Session
ViewState
Querystring

Answer Area:

Answer Area

REST API Endpoint:

https:// [▼] .vault.azure.net/secrets/ [▼] /

cpandlkeyvault
PostgreSQLConn
80df3e46ffcd4f1cb187f79905e9a1e8

Variable type to access Azure Key Vault secret values:

[▼]

Environment
Session
ViewState
Querystring

Section:

Explanation:

Azure database connection string retrieve REST API vault.azure.net/secrets/

Box 1: cpandlkeyvault

We specify the key vault, cpandlkeyvault.

Scenario: The database connection string is stored in Azure Key Vault with the following attributes:

Azure Key Vault name: cpandlkeyvault

Secret name: PostgreSQLConn

Id: 80df3e46ffcd4f1cb187f79905e9a1e8

Box 2: PostgreSQLConn

We specify the secret, PostgreSQLConn

Example, sample request:

https://myvault.vault.azure.net//secrets/mysecretname/4387e9f3d6e14c459867679a90fd0f79?api-version=7.1

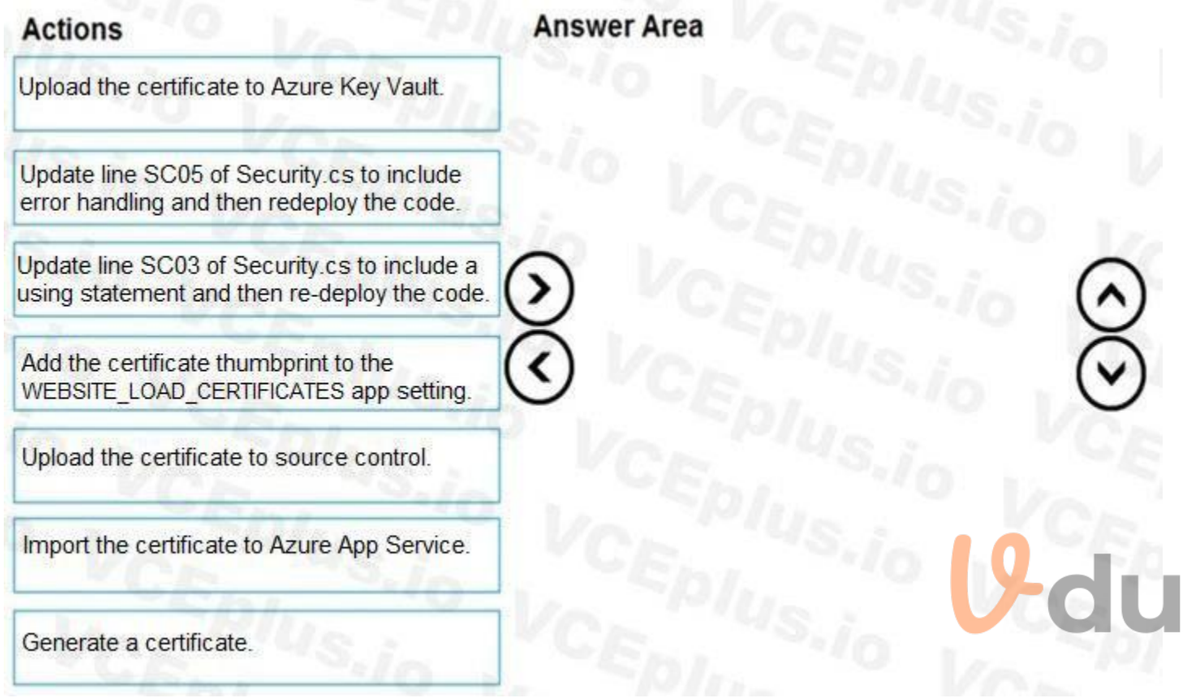
Box 3: Querystring

Reference:

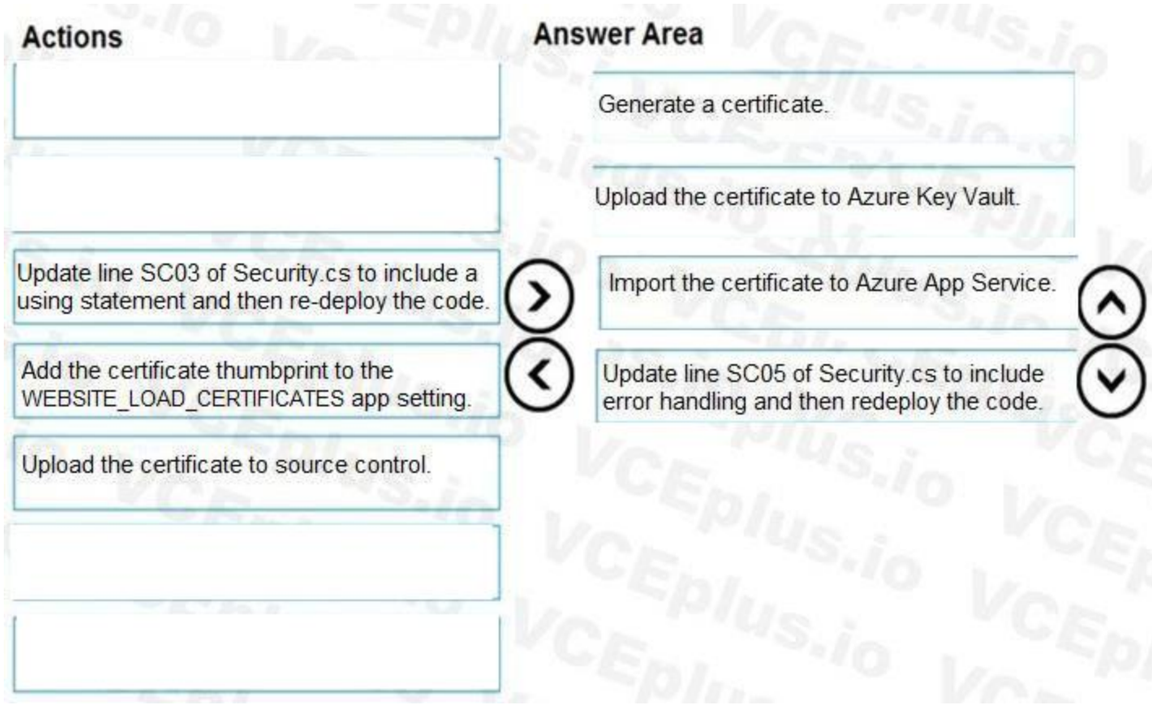
https://docs.microsoft.com/en-us/rest/api/keyvault/getsecret/getsecret

QUESTION 2
DRAG DROP
You need to correct the corporate website error.
Which four actions should you recommend be performed in sequence? To answer, 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:



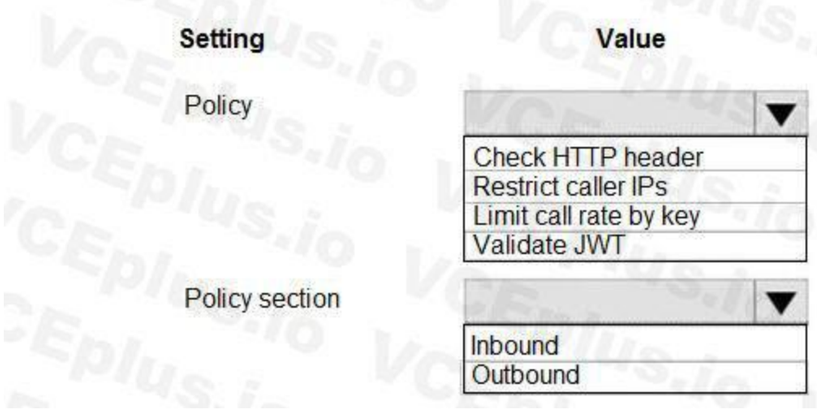
Section:

Explanation:
Scenario: Corporate website
While testing the site, the following error message displays:
CryptographicException: The system cannot find the file specified.
Step 1: Generate a certificate
Step 2: Upload the certificate to Azure Key Vault
Scenario: All SSL certificates and credentials must be stored in Azure Key Vault.
Step 3: Import the certificate to Azure App Service
Step 4: Update line SCO5 of Security.cs to include error handling and then redeploy the code
Reference:
https://docs.microsoft.com/en-us/azure/app-service/configure-ssl-certificate

QUESTION 3
HOTSPOT
You need to configure API Management for authentication.
Which policy values should you use? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

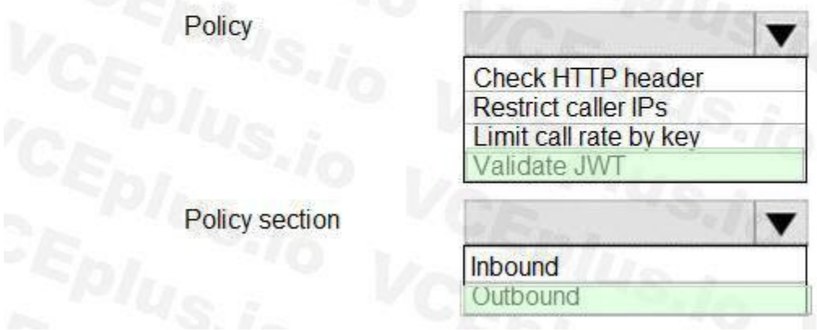
Hot Area:

Answer Area



Answer Area:

Answer Area



Section:

Explanation:

Box 1: Validate JWT

The validate-jwt policy enforces existence and validity of a JWT extracted from either a specified HTTP Header or a specified query parameter.

Scenario: User authentication (see step 5 below)

The following steps detail the user authentication process:

1. The user selects Sign in in the website.
2. The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.
3. The user signs in.
4. Azure AD redirects the user's session back to the web application. The URL includes an access token.
5. The web application calls an API and includes the access token in the authentication header. The application ID is sent as the audience ('aud') claim in the access token.
6. The back-end API validates the access token.

Incorrect Answers:

Limit call rate by key - Prevents API usage spikes by limiting call rate, on a per key basis.

Restrict caller IPs - Filters (allows/denies) calls from specific IP addresses and/or address ranges.

Check HTTP header - Enforces existence and/or value of a HTTP Header.

Box 2: Outbound

Reference:

https://docs.microsoft.com/en-us/azure/api-management/api-management-access-restriction-policies

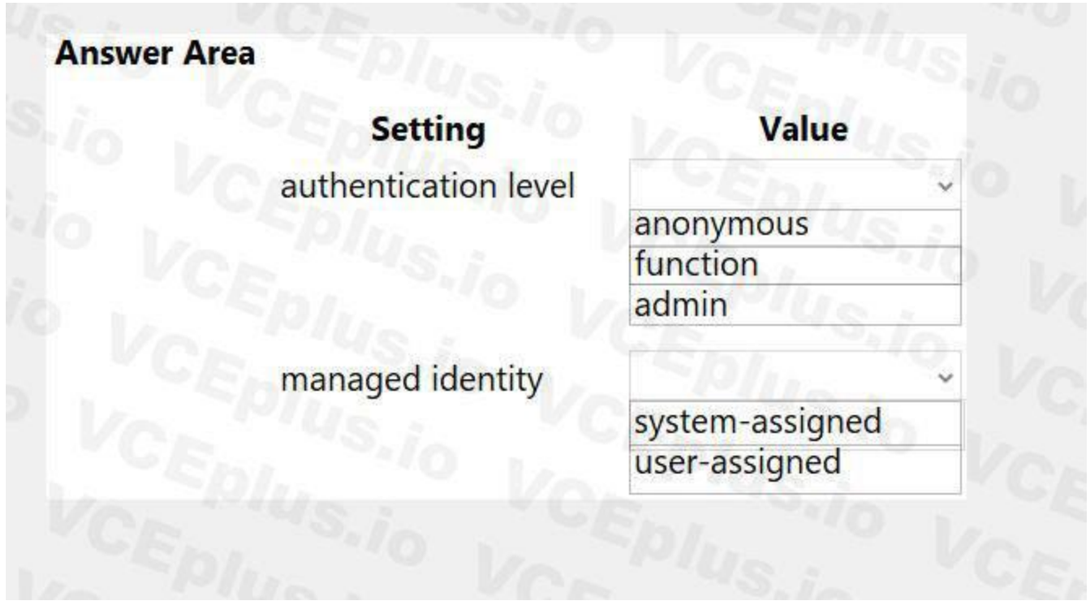
QUESTION 4
You need to authenticate the user to the corporate website as indicated by the architectural diagram.
Which two values should you use? Each correct answer presents part of the solution.
NOTE: Each correct selection is worth one point.

A. ID token signature
B. ID token claims
C. HTTP response code
D. Azure AD endpoint URI
E. Azure AD tenant ID

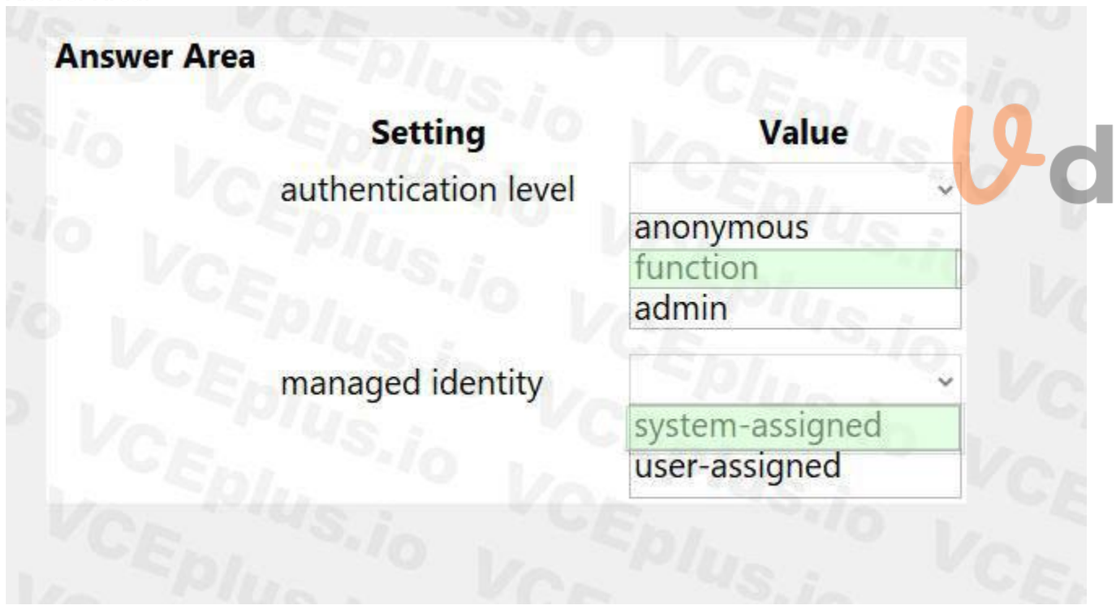
Correct Answer: A, D
Section:
Explanation:
A: Claims in access tokens
JWTs (JSON Web Tokens) are split into three pieces:
Header - Provides information about how to validate the token including information about the type of token and how it was signed.
Payload - Contains all of the important data about the user or app that is attempting to call your service.
Signature - Is the raw material used to validate the token.
E: Your client can get an access token from either the v1.0 endpoint or the v2.0 endpoint using a variety of protocols.
Scenario: User authentication (see step 5 below)
The following steps detail the user authentication process:
1. The user selects Sign in in the website.
2. The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.
3. The user signs in.
4. Azure AD redirects the user's session back to the web application. The URL includes an access token.
5. The web application calls an API and includes the access token in the authentication header. The application ID is sent as the audience ('aud') claim in the access token.
6. The back-end API validates the access token.
Reference:
https://docs.microsoft.com/en-us/azure/api-management/api-management-access-restriction-policies

QUESTION 5
HOTSPOT
You need to correct the Azure Logic app error message.
Which configuration values should you use? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:



Section:

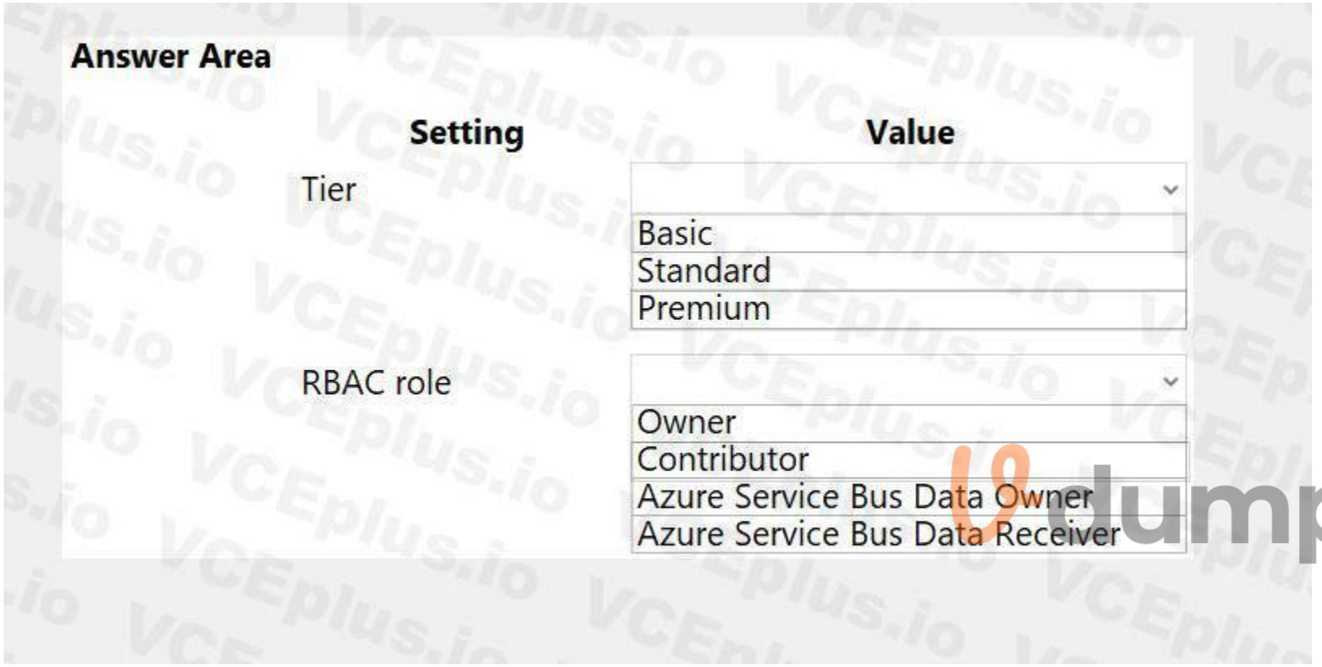
Explanation:

Scenario: You test the Logic app in a development environment. The following error message displays:
'400 Bad Request'
Troubleshooting of the error shows an HttpTrigger action to call the RequestUserApproval function.
Note: If the inbound call's request body doesn't match your schema, the trigger returns an HTTP 400 Bad Request error.
Box 1: function
If you have an Azure function where you want to use the system-assigned identity, first enable authentication for Azure functions.
Box 2: system-assigned
Your logic app or individual connections can use either the system-assigned identity or a single user-assigned identity, which you can share across a group of logic apps, but not both.
Reference:

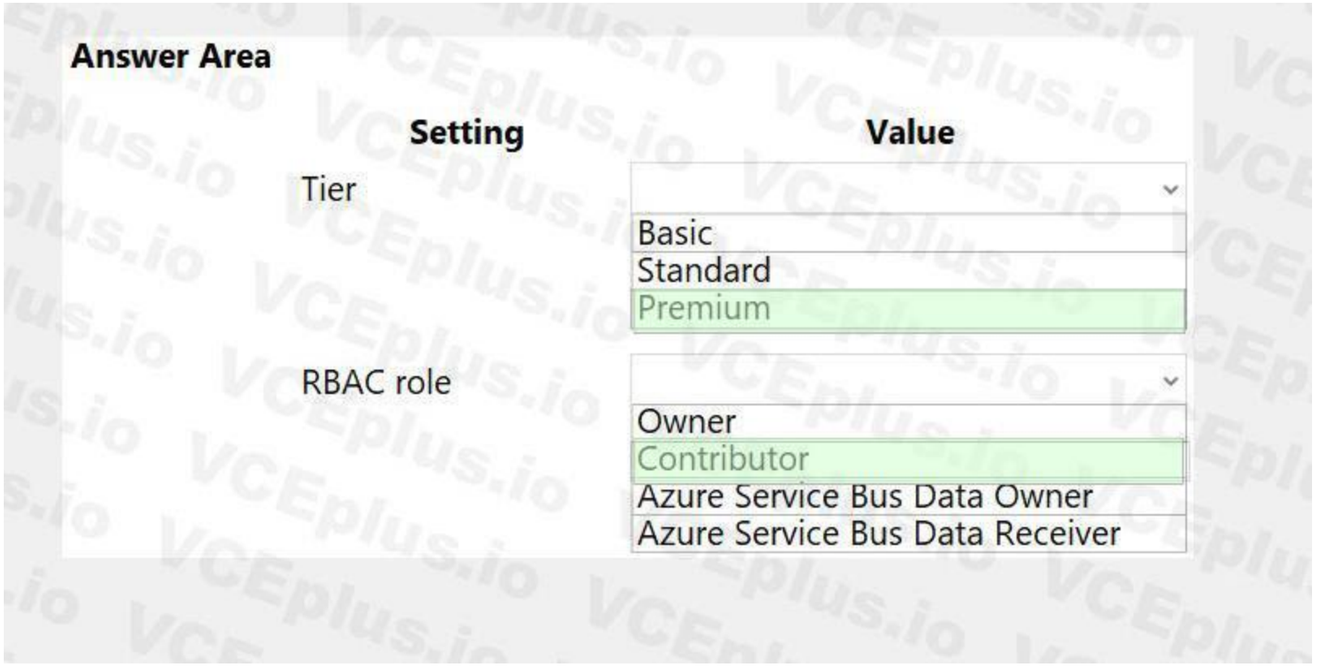
https://docs.microsoft.com/en-us/azure/logic-apps/create-managed-service-identity

QUESTION 6
HOTSPOT
You need to configure Azure Service Bus to Event Grid integration.
Which Azure Service Bus settings should you use? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:



Section:
Explanation:
Box 1: Premium
Service Bus can now emit events to Event Grid when there are messages in a queue or a subscription when no receivers are present. You can create Event Grid subscriptions to your Service Bus namespaces, listen to these events, and then react to the events by starting a receiver. With this feature, you can use Service Bus in reactive programming models.
To enable the feature, you need the following items:
A Service Bus Premium namespace with at least one Service Bus queue or a Service Bus topic with at least one subscription.
Contributor access to the Service Bus namespace.
Box 2: Contributor
Reference:
https://docs.microsoft.com/en-us/azure/service-bus-messaging/service-bus-to-event-grid-integration-concept

04 - Implement Azure security
Case study
This is a case study. Case studies are not timed separately. You can use as much exam time as you would like to complete each case. However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.
To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other questions in this case study.
At the end of this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.
To start the case study
To display the first question in this case study, click the Next button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. When you are ready to answer a question, click the Question button to return to the question.
Background
You are a developer for Litware Inc., a SaaS company that provides a solution for managing employee expenses. The solution consists of an ASP.NET Core Web API project that is deployed as an Azure Web App.
Overall architecture
Employees upload receipts for the system to process. When processing is complete, the employee receives a summary report email that details the processing results. Employees then use a web application to manage their receipts and perform any additional tasks needed for reimbursement.
Receipt processing

Employees may upload receipts in two ways:
Uploading using an Azure Files mounted folder
Uploading using the web application
Data Storage
Receipt and employee information is stored in an Azure SQL database.
Documentation
Employees are provided with a getting started document when they first use the solution. The documentation includes details on supported operating systems for Azure File upload, and instructions on how to configure the mounted folder.
Solution details
Users table

Column	Description
UserId	unique identifier for and employee
ExpenseAccount	employees expense account number in the format 1234-123-1234
AllowedAmount	limit of allowed expenses before approval is needed
SupervisorId	unique identifier for employee's supervisor
SecurityPin	value used to validate user identity

Web Application
You enable MSI for the Web App and configure the Web App to use the security principal name WebAppIdentity.
Processing
Processing is performed by an Azure Function that uses version 2 of the Azure Function runtime. Once processing is completed, results are stored in Azure Blob Storage and an Azure SQL database. Then, an email summary is sent to the user with a link to the processing report. The link to the report must remain valid if the email is forwarded to another user.
Logging
Azure Application Insights is used for telemetry and logging in both the processor and the web application. The processor also has TraceWriter logging enabled. Application Insights must always contain all log messages.
Requirements
Receipt processing
Concurrent processing of a receipt must be prevented.
Disaster recovery
Regional outage must not impact application availability. All DR operations must not be dependent on application running and must ensure that data in the DR region is up to date.
Security
User's SecurityPin must be stored in such a way that access to the database does not allow the viewing of SecurityPins. The web application is the only system that should have access to SecurityPins.
All certificates and secrets used to secure data must be stored in Azure Key Vault.
You must adhere to the principle of least privilege and provide privileges which are essential to perform the intended function.
All access to Azure Storage and Azure SQL database must use the application's Managed Service Identity (MSI).
Receipt data must always be encrypted at rest.
All data must be protected in transit.
User's expense account number must be visible only to logged in users. All other views of the expense account number should include only the last segment, with the remaining parts obscured.
In the case of a security breach, access to all summary reports must be revoked without impacting other parts of the system.
Issues
Upload format issue
Employees occasionally report an issue with uploading a receipt using the web application. They report that when they upload a receipt using the Azure File Share, the receipt does not appear in their profile. When this occurs, they delete the file in the file share and use the web application, which returns a 500 Internal Server error page.
Capacity issue
During busy periods, employees report long delays between the time they upload the receipt and when it appears in the web application.
Log capacity issue
Developers report that the number of log messages in the trace output for the processor is too high, resulting in lost log messages.
Application code
Processing.cs

```
PC01 public static class Processing
PC02 {
PC03   public static class Function
PC04   {
PC05     [FunctionName("IssueWork")]
PC06     public static async Task Run([TimerTrigger("0 */5 * * * *")] TimerInfo timer, ILogger
log)
PC07     {
PC08       var container = await GetCloudBlobContainer();
PC09       foreach (var fileItem in await ListFiles())
PC10       {
PC11         var file = new CloudFile(fileItem.StorageUri.PrimaryUri);
PC12         var ms = new MemoryStream();
PC13         await file.DownloadToStreamAsync(ms);
PC14         var blob = container.GetBlockBlobReference(fileItem.Uri.ToString());
PC15         await blob.UploadFromStreamAsync(ms);
PC16
PC17       }
PC18     }
PC19     private static CloudBlockBlob GetDRBlob(CloudBlockBlob sourceBlob)
PC20     {
PC21       . . .
PC22     }
PC23     private static async Task<CloudBlobContainer> GetCloudBlobContainer()
PC24     {
PC25       var cloudBlobClient = new CloudBlobClient(new Uri(". . ."), await GetCredentials());
PC26
PC27       await cloudBlobClient.GetRootContainerReference().CreateIfNotExistsAsync();
PC28       return cloudBlobClient.GetRootContainerReference();
PC29     }
PC30     private static async Task<StorageCredentials> GetCredentials()
PC31     {
PC32       . . .
PC33     }
PC34     private static async Task<List<IListFileItem>> ListFiles()
PC35     {
PC36       . . .
PC37     }
PC37     private KeyVaultClient _keyVaultClient = new KeyVaultClient(". . .");
PC38   }

PC39 }
```

Database.cs

```
DB01 public class Database
DB02 {
DB03   private string ConnectionString =
DB04
DB05   public async Task<object> LoadUserDetails(string userId)
DB06   {
DB07
DB08     return await policy.ExecuteAsync(async () =>
DB09     {
DB10       using (var connection = new SqlConnection(ConnectionString))
DB11       {
DB12         await connection.OpenAsync();
DB13         using (var command = new SqlCommand("…", connection))
DB14         using (var reader = command.ExecuteReader())
DB15         {
DB16           …
DB17         }
DB18       }
DB19     });
DB20   }
DB21 }
```

ReceiptUploader.cs

```
RU01 public class ReceiptUploader
RU02 {
RU03   public async Task UploadFile(string file, byte[] binary)
RU04   {
RU05     var httpClient = new HttpClient();
RU06     var response = await httpClient.PutAsync("…", new ByteArrayContent(binary));
RU07     while (ShouldRetry(response))
RU08     {
RU09       response = await httpClient.PutAsync("…", new ByteArrayContent(binary));
RU10     }
RU11   }
RU12   private bool ShouldRetry(HttpResponseMessage response)
RU13   {
RU14
RU15   }
RU16 }
```

ConfigureSSE.ps1

```
CS01 $storageAccount = Get-AzureRmStorageAccount -ResourceGroupName "..." -AccountName "..."
CS02 $keyVault = Get-AzureRmKeyVault -VaultName "..."
CS03 $key = Get-AzureKeyVaultKey -VaultName $keyVault.VaultName -Name "..."
CS04  Set-AzureRmKeyVaultAccessPolicy `
CS05    -VaultName $keyVault.VaultName `
CS06    -ObjectId $storageAccount.Identity.PrincipalId `
CS07
CS08
CS09  Set-AzureRmStorageAccount `
CS10    -ResourceGroupName $storageAccount.ResourceGroupName `
CS11    -AccountName $storageAccount.StorageAccountName `
CS12    -EnableEncryptionService File `
CS13    -KeyvaultEncryption `
CS14    -KeyName $key.Name
CS15    -KeyVersion $key.Version `
CS16    -KeyVaultUri $keyVault.VaultUri
```

QUESTION 1
HOTSPOT
You need to add code at line PC26 of Processing.cs to ensure that security policies are met.
How should you complete the code that you will add at line PC26? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

```
var resolver = new KeyVaultKeyResolver(_keyVaultClient);
var keyBundle = await _keyVaultClient.GetKeyAsync("...", "...");
```

var key = keyBundle.Key;
var key = keyBundle.KeyIdentifier.Identifier;
var key = await resolver.ResolveKeyAsync("encrypt", null);
var key = await resolver.ResolveKeyAsync(keyBundle.KeyIdentifier.Identifier, CancellationToken.None);

var x = keyBundle.Managed;
var x = AuthenticationScheme.SharedKey;
var x = new BlobEncryptionPolicy(key, resolver);
var x = new DeleteRetentionPolicy {Enabled = key.Kid != null};

cloudBlobClient.AuthenticationScheme = x;
cloudBlobClient.DefaultRequestOptions.RequireEncryption = x;
cloudBlobClient.DefaultRequestOptions.EncryptionPolicy = x;
cloudBlobClient.SetServiceProperties(new ServiceProperties(deleteRetentionPolicy:x));

Answer Area:

Answer Area

```
var resolver = new KeyVaultKeyResolver(_keyVaultClient);
var keyBundle = await _keyVaultClient.GetKeyAsync("...", "...");
```

var key = keyBundle.Key;
var key = keyBundle.KeyIdentifier.Identifier;
var key = await resolver.ResolveKeyAsync("encrypt", null);
var key = await resolver.ResolveKeyAsync(keyBundle.KeyIdentifier.Identifier, CancellationToken.None);

var x = keyBundle.Managed;
var x = AuthenticationScheme.SharedKey;
var x = new BlobEncryptionPolicy(key, resolver);
var x = new DeleteRetentionPolicy {Enabled = key.Kid != null};

cloudBlobClient.AuthenticationScheme = x;
cloudBlobClient.DefaultRequestOptions.RequireEncryption = x;
cloudBlobClient.DefaultRequestOptions.EncryptionPolicy = x;
cloudBlobClient.SetServiceProperties(new ServiceProperties(deleteRetentionPolicy:x));

Section:
Explanation:
Box 1: var key = await Resolver.ResolveKeyAsyn(keyBundle,KeyIdentifier.CancellationToken.None);
Box 2: var x = new BlobEncryptionPolicy(key,resolver);
Example:
// We begin with cloudKey1, and a resolver capable of resolving and caching Key Vault secrets.
BlobEncryptionPolicy encryptionPolicy = new BlobEncryptionPolicy(cloudKey1, cachingResolver); client.DefaultRequestOptions.EncryptionPolicy = encryptionPolicy;
Box 3: cloudblobClient. DefaultRequestOptions.EncryptionPolicy = x;
Reference:
https://github.com/Azure/azure-storage-net/blob/master/Samples/GettingStarted/EncryptionSamples/KeyRotation/Program.cs

QUESTION 2
You need to ensure the security policies are met.
What code do you add at line CS07 of ConfigureSSE.ps1?

A. -PermissionsToKeys create, encrypt, decrypt
B. -PermissionsToCertificates create, encrypt, decrypt
C. -PermissionsToCertificates wrapkey, unwrapkey, get
D. -PermissionsToKeys wrapkey, unwrapkey, get

Correct Answer: B
Section:
Explanation:
Scenario: All certificates and secrets used to secure data must be stored in Azure Key Vault.
You must adhere to the principle of least privilege and provide privileges which are essential to perform the intended function.
The Set-AzureRmKeyValutAccessPolicy parameter -PermissionsToKeys specifies an array of key operation permissions to grant to a user or service principal. The acceptable values for this parameter: decrypt, encrypt, unwrapKey, wrapKey, verify, sign, get, list, update, create, import, delete, backup, restore, recover, purge
Incorrect Answers:
A, C: The Set-AzureRmKeyValutAccessPolicy parameter -PermissionsToCertificates specifies an array of certificate permissions to grant to a user or service principal. The acceptable values for this parameter: get, list, delete, create, import, update, managecontacts, getissuers, listissuers, setissuers, deleteissuers, manageissuers, recover, purge, backup, restore
Reference:
https://docs.microsoft.com/en-us/powershell/module/azurerm.keyvault/set-azurermkeyvaultaccesspolicy

05 - Implement Azure security

QUESTION 1
You develop and deploy an Azure Logic app that calls an Azure Function app. The Azure Function app includes an OpenAPI (Swagger) definition and uses an Azure Blob storage account. All resources are secured by using Azure Active
Directory (Azure AD).
The Azure Logic app must securely access the Azure Blob storage account. Azure AD resources must remain if the Azure Logic app is deleted.
You need to secure the Azure Logic app.
What should you do?

A. Create a user-assigned managed identity and assign role-based access controls.
B. Create an Azure AD custom role and assign the role to the Azure Blob storage account.
C. Create an Azure Key Vault and issue a client certificate.
D. Create a system-assigned managed identity and issue a client certificate.
E. Create an Azure AD custom role and assign role-based access controls.

Correct Answer: A
Section:
Explanation:
To give a managed identity access to an Azure resource, you need to add a role to the target resource for that identity.
Note: To easily authenticate access to other resources that are protected by Azure Active Directory (Azure AD) without having to sign in and provide credentials or secrets, your logic app can use a managed identity (formerly known as Managed Service Identity or MSI). Azure manages this identity for you and helps secure your credentials because you don't have to provide or rotate secrets.
If you set up your logic app to use the system-assigned identity or a manually created, user-assigned identity, the function in your logic app can also use that same identity for authentication.
Reference:
https://docs.microsoft.com/en-us/azure/logic-apps/create-managed-service-identity
https://docs.microsoft.com/en-us/azure/api-management/api-management-howto-mutual-certificates-for-clients

QUESTION 2
HOTSPOT
You are developing an application that uses a premium block blob storage account. You are optimizing costs by automating Azure Blob Storage access tiers.
You apply the following policy rules to the storage account. You must determine the implications of applying the rules to the data. (Line numbers are included for reference only.)

```
{
  "rules":
    {
      "name": "agingDataRule",
      "enabled": true,
      "type": "Lifecycle",
      "definition":
        "filters": {
          "blobTypes": [ "blockBlob" ],
          "prefixMatch": [ "container1/salesorders", "container2/inventory" ]
        },
        "actions": {
          "baseBlob": {
            "tierToCool": { "daysAfterModificationGreaterThan": 60 },
            "tierToArchive": { "daysAfterModificationGreaterThan": 120 }
          }
        }
      }
    },
    {
      "enabled": true,
      "name": "lastAccessedDataRule",
      "type": "Lifecycle",
      "definition": {
        "actions": {
          "baseBlob": {
            "enableAutoTierToHotFromCool": true,
            "tierToCool": {
              "daysAfterLastAccessTimeGreaterThan": 30
            }
          }
        },
        "filters": {
          "blobTypes": [ "blockBlob" ]
        }
      }
    },
    {
      "rules": [
        {
          "name": "expirationDataRule",
          "enabled": true,
          "type": "Lifecycle",
          "definition": {
            "filters": {
              "blobTypes": [ "blockBlob" ]
            },
            "actions": {
              "baseBlob": {
                "delete": { "daysAfterModificationGreaterThan": 730 }
              }
            }
          }
        }
      ]
    }
  ]
}
```

For each of the following statements, select Yes if the statement is true. Otherwise, select No.
NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

	Yes	No
Block blobs prefixed with container1/salesorders or container2/inventory which have not been modified in over 60 days are moved to cool storage. Blobs that have not been modified in 120 days are moved to the archive tier.	○	○
Blobs are moved to cool storage if they have not been accessed for 30 days.	○	○
Blobs will automatically be tiered from cool back to hot if accessed again after being tiered to cool.	○	○
All block blobs older than 730 days will be deleted.	○	○

Answer Area:

Answer Area

	Yes	No
Block blobs prefixed with container1/salesorders or container2/inventory which have not been modified in over 60 days are moved to cool storage. Blobs that have not been modified in 120 days are moved to the archive tier.	○	○
Blobs are moved to cool storage if they have not been accessed for 30 days.	○	○
Blobs will automatically be tiered from cool back to hot if accessed again after being tiered to cool.	○	○
All block blobs older than 730 days will be deleted.	○	○

Section:
Explanation:
Box 1: Yes

```
"rules":
  {
    "name": "agingDataRule",
    "enabled": true,
    "type": "Lifecycle",
    "definition":
      "filters": {
        "blobTypes": [ "blockBlob" ],
        "prefixMatch": [ "container1/salesorders", "container2/inventory" ]
      },
      "actions": {
        "baseBlob": {
          "tierToCool": { "daysAfterModificationGreaterThan": 60 },
          "tierToArchive": { "daysAfterModificationGreaterThan": 120 }
```

Box 2: Yes

```
"enabled": true,
"name": "lastAccessedDataRule",
"type": "Lifecycle",
"definition": {
  "actions": {
    "baseBlob": {
      "enableAutoTierToHotFromCool": true,
      "tierToCool": {
        "daysAfterLastAccessTimeGreaterThan": 30
      }
    }
  },
```

Box 3: Yes

Box 4: Yes

```
"rules": [
  {
    "name": "expirationDataRule",
    "enabled": true,
    "type": "Lifecycle",
    "definition": {
      "filters": {
        "blobTypes": [ "blockBlob" ]
      },
      "actions": {
        "baseBlob": {
          "delete": { "daysAfterModificationGreaterThan": 730 }
```

QUESTION 3

You are developing a solution that will use a multi-partitioned Azure Cosmos DB database. You plan to use the latest Azure Cosmos DB SDK for development.

The solution must meet the following requirements:

Send insert and update operations to an Azure Blob storage account.

Process changes to all partitions immediately.

Allow parallelization of change processing.

You need to process the Azure Cosmos DB operations.

What are two possible ways to achieve this goal? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

A. Create an Azure App Service API and implement the change feed estimator of the SDK. Scale the API by using multiple Azure App Service instances.

B. Create a background job in an Azure Kubernetes Service and implement the change feed feature of the SDK.

C. Create an Azure Function to use a trigger for Azure Cosmos DB. Configure the trigger to connect to the container.

D. Create an Azure Function that uses a FeedIterator object that processes the change feed by using the pull model on the container. Use a FeedRange objext to parallelize the processing of the change feed across multiple functions.

Correct Answer: C
Section:
Explanation:
Azure Functions is the simplest option if you are just getting started using the change feed. Due to its simplicity, it is also the recommended option for most change feed use cases. When you create an Azure Functions trigger for Azure Cosmos DB, you select the container to connect, and the Azure Function gets triggered whenever there is a change in the container. Because Azure Functions uses the change feed processor behind the scenes, it automatically parallelizes change processing across your container's partitions.
Note: You can work with change feed using the following options:
Using change feed with Azure Functions
Using change feed with change feed processor
Reference:
https://docs.microsoft.com/en-us/azure/cosmos-db/read-change-feed

QUESTION 4
HOTSPOT
You have an Azure Web app that uses Cosmos DB as a data store. You create a CosmosDB container by running the following PowerShell script:

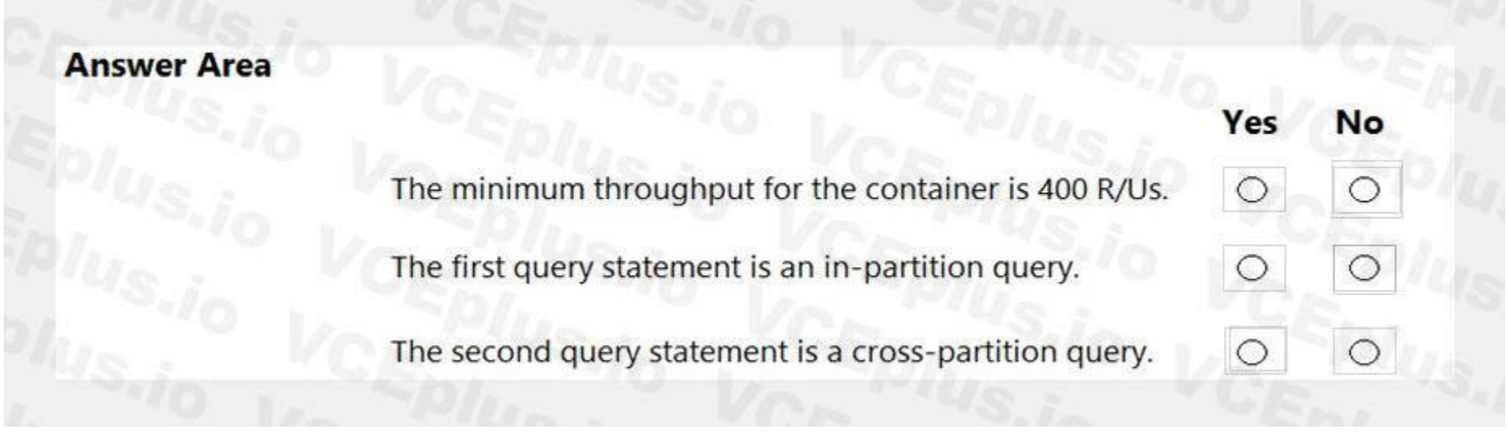
```
$resourceGroupName = "testResourceGroup"
$accountName = "testCosmosAccount"
$databaseName = "testDatabase"
$containerName = "testContainer"
$partitionKeyPath = "/EmployeeId"
$autoscaleMaxThroughput = 5000
New-AzCosmosDBSqlContainer
-ResourceGroupName $resourceGroupName
-AccountName $accountName
-DatabaseName $databaseName
-Name $containerName
-PartitionKeyKind Hash
-PartitionKeyPath $partitionKeyPath
-AutoscaleMaxThroughput $autoscaleMaxThroughput
```

You create the following queries that target the container:

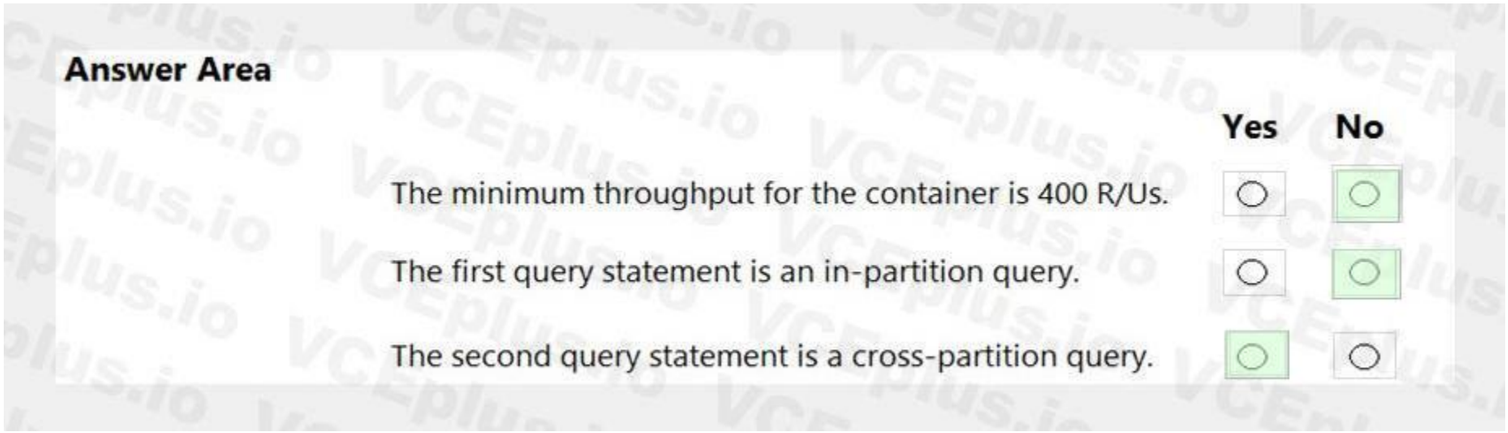
```
SELECT * FROM c WHERE c.EmployeeId > '12345'
SELECT * FROM c WHERE c.UserID = '12345'
```

For each of the following statements, select Yes if the statement is true. Otherwise, select No.
NOTE: Each correct selection is worth one point.

Hot Area:



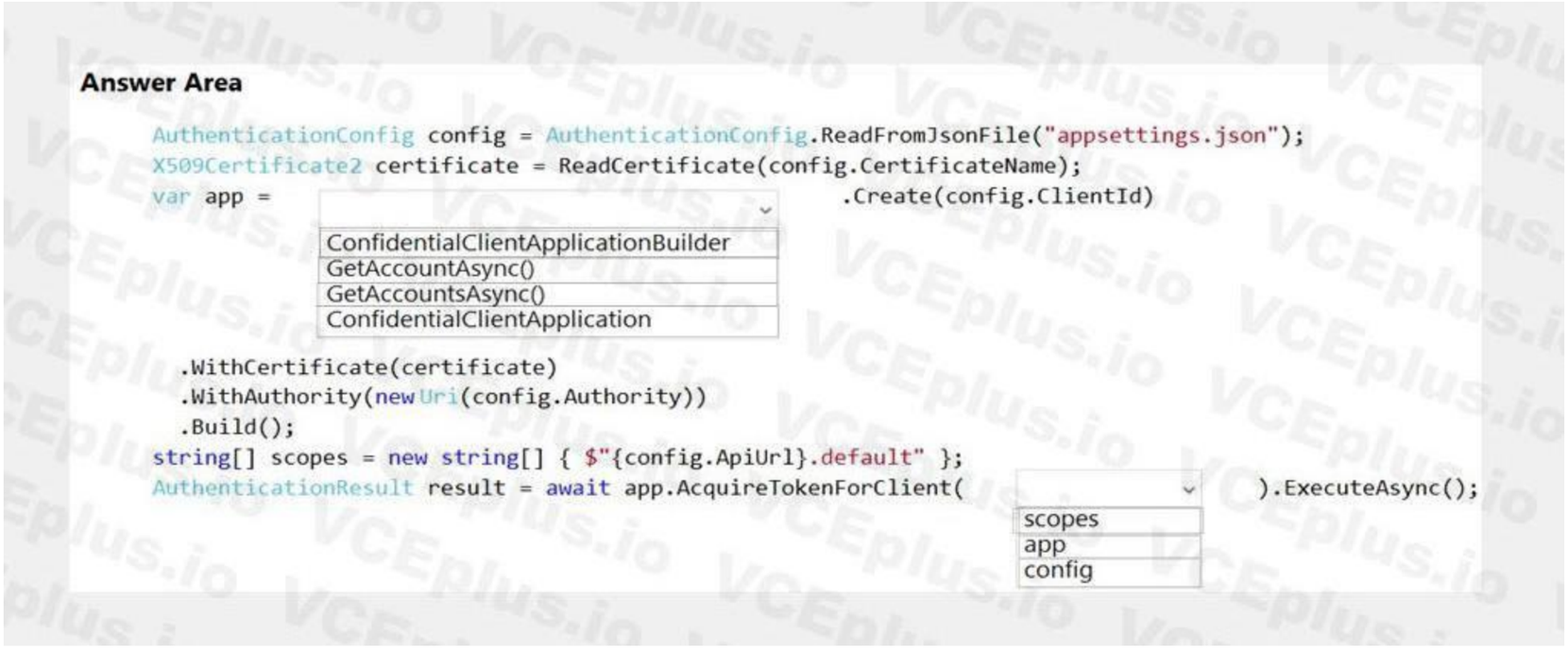
Answer Area:



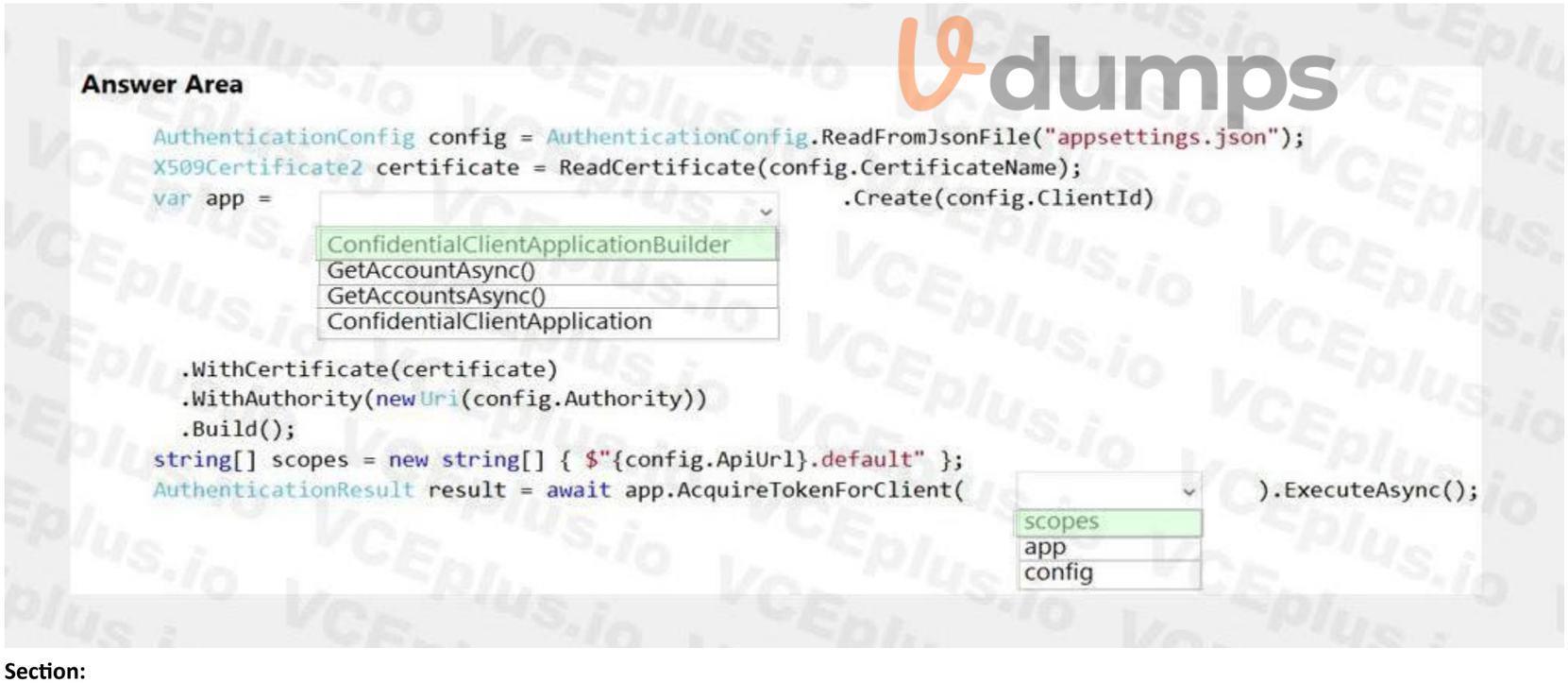
Section:
Explanation:
Box 1: No You set the highest, or maximum RU/s Tmax you don't want the system to exceed. The system automatically scales the throughput T such that 0.1* Tmax <= T <= Tmax.
In this example we have autoscaleMaxThroughput = 5000, so the minimum throughput for the container is 500 R/Us.
Box 2: No
First query: SELECT * FROM c WHERE c.EmployeeId > '12345'
Here's a query that has a range filter on the partition key and won't be scoped to a single physical partition. In order to be an in-partition query, the query must have an equality filter that includes the partition key:
SELECT * FROM c WHERE c.DeviceId > 'XMS-0001'
Box 3: Yes
Example of In-partition query:
Consider the below query with an equality filter on DeviceId. If we run this query on a container partitioned on DeviceId, this query will filter to a single physical partition.
SELECT * FROM c WHERE c.DeviceId = 'XMS-0001'
Reference:
https://docs.microsoft.com/en-us/azure/cosmos-db/how-to-choose-offer
https://docs.microsoft.com/en-us/azure/cosmos-db/how-to-query-container

QUESTION 5
HOTSPOT
You are developing a web application that makes calls to the Microsoft Graph API. You register the application in the Azure portal and upload a valid X509 certificate.
You create an appsettings.json file containing the certificate name, client identifier for the application, and the tenant identifier of the Azure Active Directory (Azure AD). You create a method named ReadCertificate to return the X509 certificate by name.
You need to implement code that acquires a token by using the certificate.
How should you complete the code segment? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:



Section:

Explanation:

Box 1: ConfidentialClientApplicationBuilder

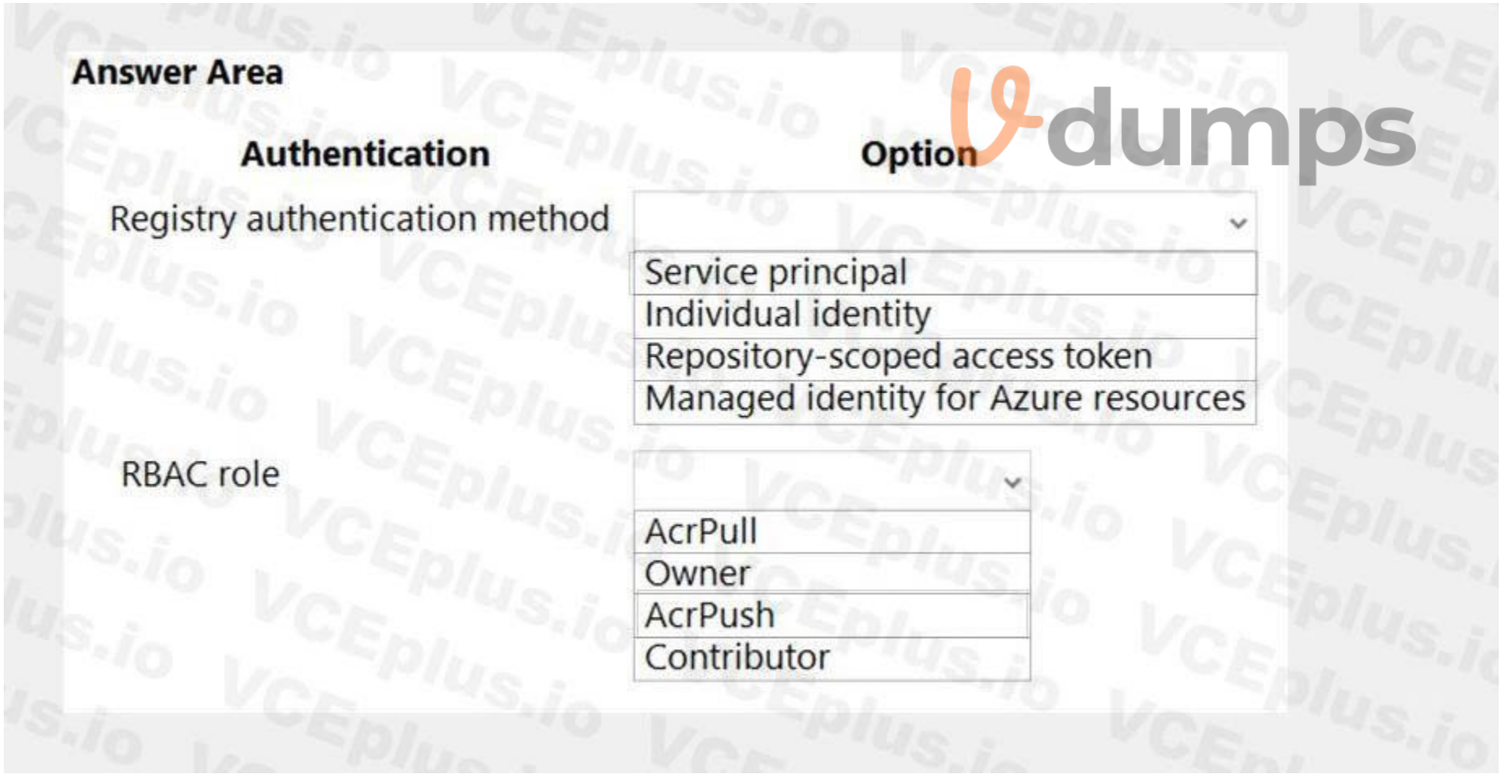
Here's the code to instantiate the confidential client application with a client secret:

app = ConfidentialClientApplicationBuilder.Create(config.ClientId)

.WithClientSecret(config.ClientSecret)
.WithAuthority(new Uri(config.Authority))
.Build();
Box 2: scopes
After you've constructed a confidential client application, you can acquire a token for the app by calling AcquireTokenForClient, passing the scope, and optionally forcing a refresh of the token.
Sample code: result = await app.AcquireTokenForClient(scopes)
.ExecuteAsync();
Reference:
https://docs.microsoft.com/en-us/azure/active-directory/develop/scenario-daemon-app-configuration
https://docs.microsoft.com/en-us/azure/active-directory/develop/scenario-daemon-acquire-token

QUESTION 6
HOTSPOT
You develop a containerized application. You plan to deploy the application to a new Azure Container instance by using a third-party continuous integration and continuous delivery (CI/CD) utility.
The deployment must be unattended and include all application assets. The third-party utility must only be able to push and pull images from the registry. The authentication must be managed by Azure Active Directory (Azure AD). The solution must use the principle of least privilege.
You need to ensure that the third-party utility can access the registry.
Which authentication options should you use? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:

Answer Area

Authentication	Option
Registry authentication method	Service principal Individual identity Repository-scoped access token Managed identity for Azure resources
RBAC role	AcrPull Owner AcrPush Contributor

Section:
Explanation:
Box 1: Service principal Applications and container orchestrators can perform unattended, or "headless," authentication by using an Azure Active Directory (Azure AD) service principal.
Incorrect Answers:
Individual AD identity does not support unattended push/pull
Repository-scoped access token is not integrated with AD identity
Managed identity for Azure resources is used to authenticate to an Azure container registry from another Azure resource.
Box 2: AcrPush
AcrPush provides pull/push permissions only and meets the principle of least privilege.
Incorrect Answers:
AcrPull only allows pull permissions it does not allow push permissions.
Owner and Contributor allow pull/push permissions but does not meet the principle of least privilege.
Reference:
https://docs.microsoft.com/en-us/azure/container-registry/container-registry-authentication?tabs=azure-cli
https://docs.microsoft.com/en-us/azure/container-registry/container-registry-roles?tabs=azure-cli

QUESTION 7
Your company is developing an Azure API.
You need to implement authentication for the Azure API. You have the following requirements:
All API calls must be secure.
Callers to the API must not send credentials to the API.
Which authentication mechanism should you use?

A. Basic
B. Anonymous

C. Managed identity
D. Client certificate

Correct Answer: C
Section:
Explanation:
Use the authentication-managed-identity policy to authenticate with a backend service using the managed identity of the API Management service. This policy essentially uses the managed identity to obtain an access token from Azure Active Directory for accessing the specified resource. After successfully obtaining the token, the policy will set the value of the token in the Authorization header using the Bearer scheme.
Reference: https://docs.microsoft.com/bs-cyrl-ba/azure/api-management/api-management-authentication-policies

QUESTION 8
You are a developer for a SaaS company that offers many web services.
All web services for the company must meet the following requirements:
Use API Management to access the services
Use OpenID Connect for authentication
Prevent anonymous usage
A recent security audit found that several web services can be called without any authentication.
Which API Management policy should you implement?

A. jsonp
B. authentication-certificate
C. check-header
D. validate-jwt

Correct Answer: D
Section:
Explanation:
Add the validate-jwt policy to validate the OAuth token for every incoming request.
Incorrect Answers:
A: The jsonp policy adds JSON with padding (JSONP) support to an operation or an API to allow cross-domain calls from JavaScript browser-based clients. JSONP is a method used in JavaScript programs to request data from a server in a different domain. JSONP bypasses the limitation enforced by most web browsers where access to web pages must be in the same domain.
JSONP - Adds JSON with padding (JSONP) support to an operation or an API to allow cross-domain calls from JavaScript browser-based clients.
Reference: https://docs.microsoft.com/en-us/azure/api-management/api-management-howto-protect-backend-with-aad

QUESTION 9
You have a new Azure subscription. You are developing an internal website for employees to view sensitive data. The website uses Azure Active Directory (Azure AD) for authentication.
You need to implement multifactor authentication for the website.
Which two actions should you perform? Each correct answer presents part of the solution.
NOTE: Each correct selection is worth one point.

A. Configure the website to use Azure AD B2C.
B. In Azure AD, create a new conditional access policy.
C. Upgrade to Azure AD Premium.
D. In Azure AD, enable application proxy.
E. In Azure AD conditional access, enable the baseline policy.

Correct Answer: B, C
Section:

Explanation:
B: MFA Enabled by conditional access policy. It is the most flexible means to enable two-step verification for your users. Enabling using conditional access policy only works for Azure MFA in the cloud and is a premium feature of Azure AD.
C: Multi-Factor Authentication comes as part of the following offerings:
Azure Active Directory Premium licenses - Full featured use of Azure Multi-Factor Authentication Service (Cloud) or Azure Multi-Factor Authentication Server (On-premises).
Multi-Factor Authentication for Office 365
Azure Active Directory Global Administrators
Reference:
https://docs.microsoft.com/en-us/azure/active-directory/authentication/howto-mfa-getstarted

QUESTION 10
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.
You develop Azure solutions.
You must grant a virtual machine (VM) access to specific resource groups in Azure Resource Manager.
You need to obtain an Azure Resource Manager access token.
Solution: Use an X.509 certificate to authenticate the VM with Azure Resource Manager.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section:
Explanation:
Instead run the Invoke-RestMethod cmdlet to make a request to the local managed identity for Azure resources endpoint.
Reference: https://docs.microsoft.com/en-us/azure/active-directory/managed-identities-azure-resources/tutorial-windows-vm-access-arm

QUESTION 11
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.
You develop Azure solutions.
You must grant a virtual machine (VM) access to specific resource groups in Azure Resource Manager.
You need to obtain an Azure Resource Manager access token.
Solution: Use the Reader role-based access control (RBAC) role to authenticate the VM with Azure Resource Manager.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section:
Explanation:
Instead run the Invoke-RestMethod cmdlet to make a request to the local managed identity for Azure resources endpoint.
Reference:
https://docs.microsoft.com/en-us/azure/active-directory/managed-identities-azure-resources/tutorial-windows-vm-access-arm

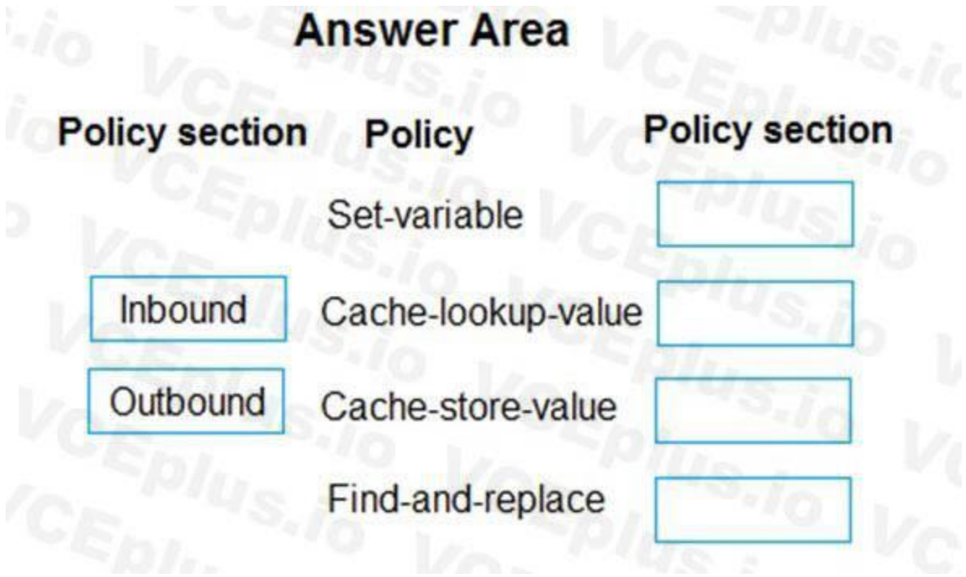
QUESTION 12
Note: This question-is part of a series of questions that present the same scenario. Each question-in the series contains a unique solution that might meet the stated goals. Some question-sets might have more than one correct solution, while others might not have a correct solution.
After 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.
You develop Azure solutions.
You must grant a virtual machine (VM) access to specific resource groups in Azure Resource Manager.
You need to obtain an Azure Resource Manager access token.
Solution: Run the Invoke-RestMethod cmdlet to make a request to the local managed identity for Azure resources endpoint.
Does the solution meet the goal?

A. Yes
B. No

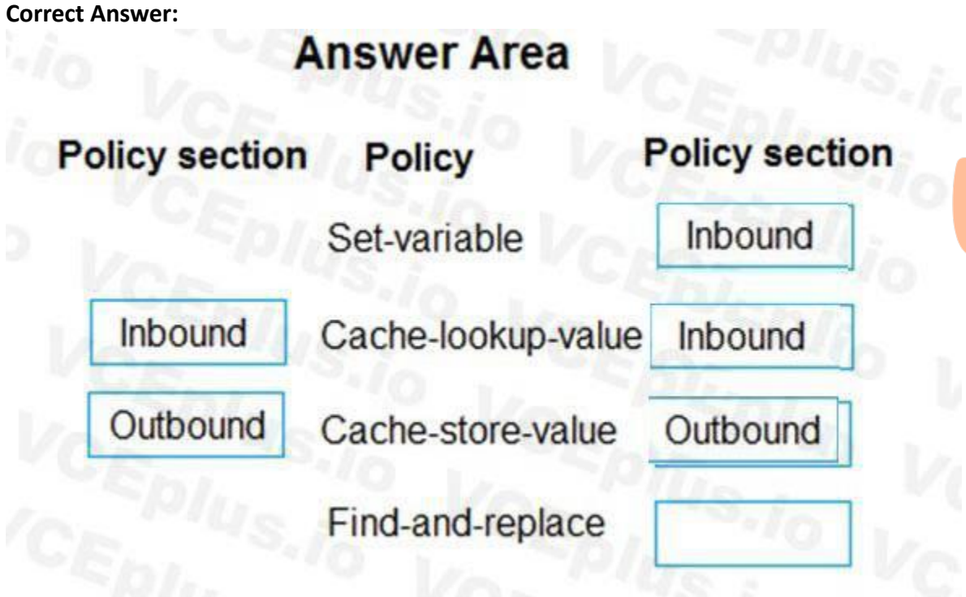
Correct Answer: A
Section:
Explanation:
Get an access token using the VM's system-assigned managed identity and use it to call Azure Resource Manager
You will need to use PowerShell in this portion.
1. In the portal, navigate to Virtual Machines and go to your Windows virtual machine and in the Overview, click Connect.
2. Enter in your Username and Password for which you added when you created the Windows VM.
3. Now that you have created a Remote Desktop Connection with the virtual machine, open PowerShell in the remote session.
4. Using the Invoke-WebRequest cmdlet, make a request to the local managed identity for Azure resources endpoint to get an access token for Azure Resource Manager.
Example:
$response = Invoke-WebRequest -Uri 'http://169.254.169.254/metadata/identity/oauth2/token?api-version=2018-02-01&resource=https://management.azure.com/' -Method GET -Headers @{Metadata="true"}
Reference:
https://docs.microsoft.com/en-us/azure/active-directory/managed-identities-azure-resources/tutorial-windows-vm-access-arm

QUESTION 13
DRAG DROP
Contoso, Ltd. provides an API to customers by using Azure API Management (APIM). The API authorizes users with a JWT token.
You must implement response caching for the APIM gateway. The caching mechanism must detect the user ID of the client that accesses data for a given location and cache the response for that user ID.
You need to add the following policies to the policies file:
a set-variable policy to store the detected user identity
a cache-lookup-value policy
a cache-store-value policy
a find-and-replace policy to update the response body with the user profile information
To which policy section should you add the policies? To answer, drag the appropriate sections to the correct policies. Each section 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.
NOTE: Each correct selection is worth one point.

Select and Place:



Correct Answer:



Section:
Explanation:
Box 1: Inbound.
A set-variable policy to store the detected user identity.
Example:
<policies>
<inbound>
<!-- How you determine user identity is application dependent -->
<set-variable
name="enduserid"
value="@(context.Request.Headers.GetValueOrDefault("Authorization","").Split(' ')[1].AsJwt()?.Subject)" />
Box 2: Inbound
A cache-lookup-value policy

Example:
<inbound>
<base />
<cache-lookup vary-by-developer="true | false" vary-by-developer-groups="true | false" downstream-caching-type="none | private | public" must-revalidate="true | false">
<vary-by-query-parameter>parameter name</vary-by-query-parameter> <!-- optional, can repeated several times -->
</cache-lookup>
</inbound>
Box 3: Outbound
A cache-store-value policy.
Example:
<outbound>
<base />
<cache-store duration="3600" />
</outbound>
Box 4: Outbound
A find-and-replace policy to update the response body with the user profile information.
Example:
<outbound>
<!-- Update response body with user profile-->
<find-and-replace
from="'$userprofile$"'
to="@((string)context.Variables["userprofile"])" />
<base />
</outbound>
Reference:
https://docs.microsoft.com/en-us/azure/api-management/api-management-caching-policies
https://docs.microsoft.com/en-us/azure/api-management/api-management-sample-cache-by-key

QUESTION 14
DRAG DROP
You develop a web application.
You need to register the application with an active Azure Active Directory (Azure AD) tenant.
Which three actions should you perform in sequence? To answer, move all actions from the list of actions to the answer area and arrange them in the correct order.

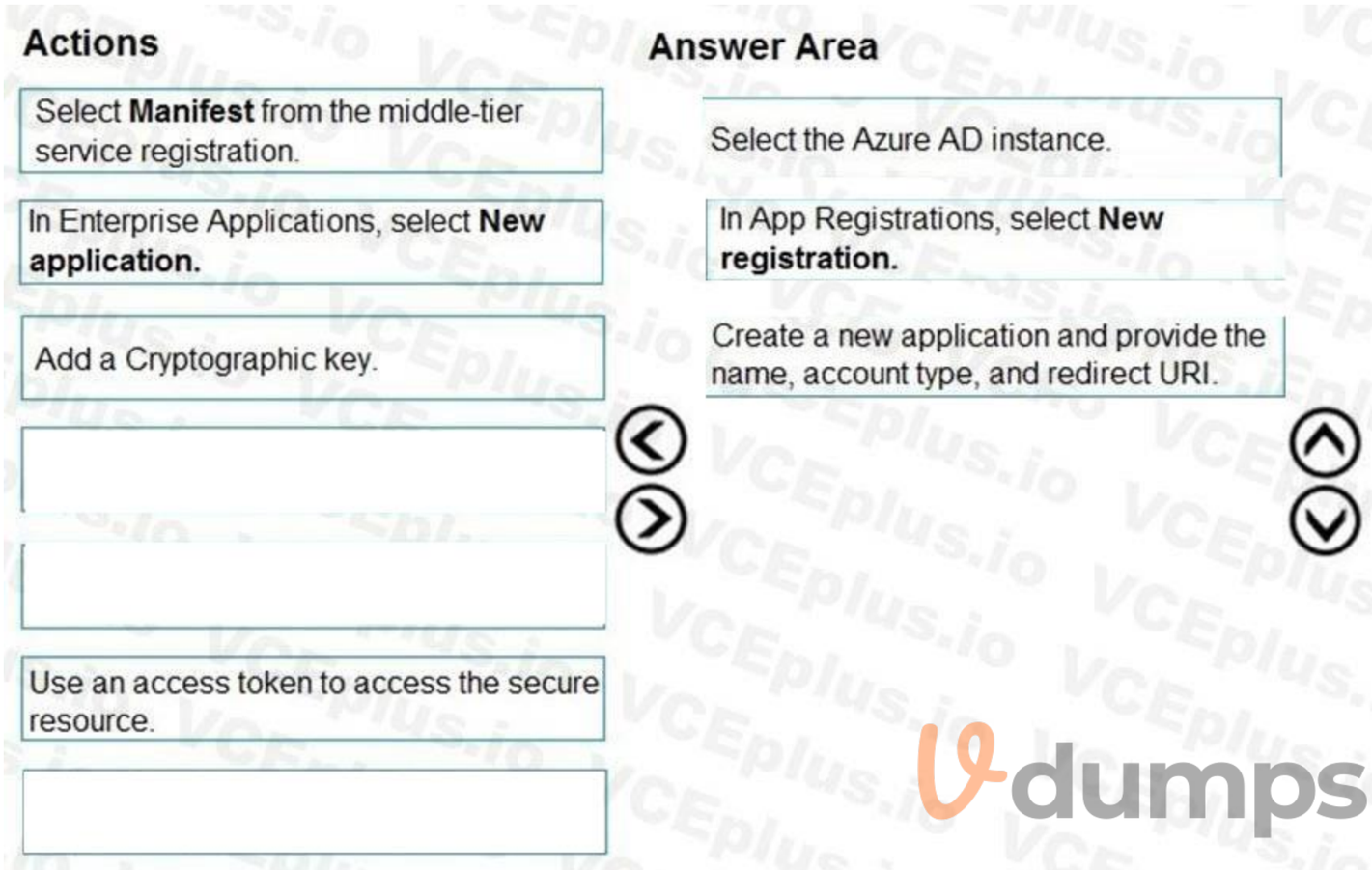
Select and Place:

Actions

- Select **Manifest** from the middle-tier service registration.
- In Enterprise Applications, select **New application.**
- Add a Cryptographic key.
- Create a new application and provide the name, account type, and redirect URI.
- Select the Azure AD instance.
- Use an access token to access the secure resource.
- In App Registrations, select **New registration.**

Answer Area

Correct Answer:



Section:
Explanation:
Register a new application using the Azure portal
1. Sign in to the Azure portal using either a work or school account or a personal Microsoft account.
2. If your account gives you access to more than one tenant, select your account in the upper right corner. Set your portal session to the Azure AD tenant that you want.
3. Search for and select Azure Active Directory. Under Manage, select App registrations.
4. Select New registration. (Step 1)
5. In Register an application, enter a meaningful application name to display to users.
6. Specify who can use the application. Select the Azure AD instance. (Step 2)
7. Under Redirect URI (optional), select the type of app you're building: Web or Public client (mobile & desktop). Then enter the redirect URI, or reply URL, for your application. (Step 3)
8. When finished, select Register.

QUESTION 15
DRAG DROP
You are developing an application. You have an Azure user account that has access to two subscriptions.
You need to retrieve a storage account key secret from Azure Key Vault.
In which order should you arrange the PowerShell commands to develop the solution? To answer, move all commands from the list of commands to the answer area and arrange them in the correct order.

Select and Place:

Powershell commands

```
$secretvalue = ConvertTo-SecureString
$storAcctkey -AsPlainText
-Force
    Set-AzKeyVaultSecret -VaultName
$vaultName -Name $secretName
-SecretValue $secretvalue
```

```
Get-AzStorageAccountKey -
ResourceGroupName $resGroup -Name
$storAcct
```

```
Set-AzContext -SubscriptionId
$subscriptionID
```

```
Get-AzKeyVaultSecret -VaultName
$vaultName
```

```
Get-AzSubscription
```

Answer Area

Correct Answer:

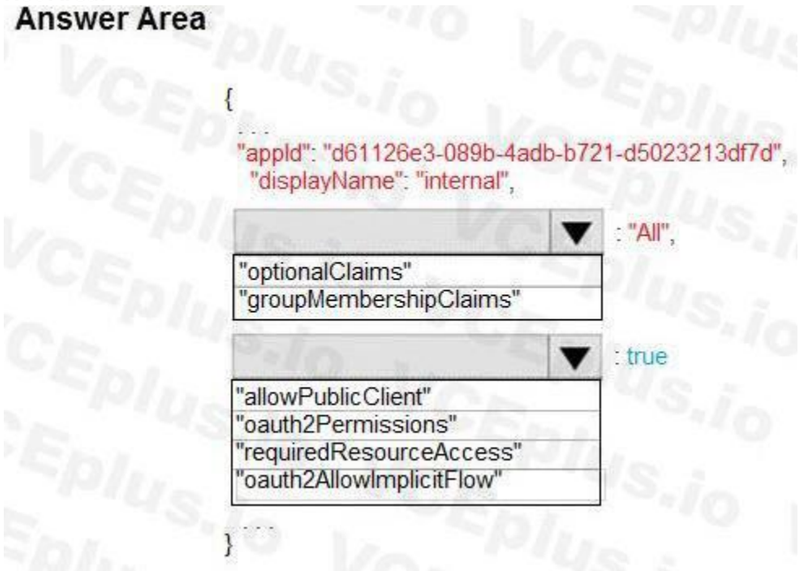
Section:

Explanation:
Step 1: Get-AzSubscription
If you have multiple subscriptions, you might have to specify the one that was used to create your key vault. Enter the following to see the subscriptions for your account:
Get-AzSubscription
Step 2: Set-AzContext -SubscriptionId
To specify the subscription that's associated with the key vault you'll be logging, enter:
Set-AzContext -SubscriptionId <subscriptionID>
Step 3: Get-AzStorageAccountKey
You must get that storage account key.
Step 4: $secretvalue = ConvertTo-SecureString <storageAccountKey> -AsPlainText -Force
Set-AzKeyVaultSecret -VaultName <vaultName> -Name <secretName> -SecretValue $secretvalue
After retrieving your secret (in this case, your storage account key), you must convert that key to a secure string, and then create a secret with that value in your key vault.
Step 5: Get-AzKeyVaultSecret
Next, get the URI for the secret you created. You'll need this URI in a later step to call the key vault and retrieve your secret. Run the following PowerShell command and make note of the ID value, which is the secret's URI:
Get-AzKeyVaultSecret -VaultName <vaultName>
Reference:
https://docs.microsoft.com/bs-latn-ba/Azure/key-vault/key-vault-key-rotation-log-monitoring

QUESTION 16
HOTSPOT
You are building a website to access project data related to teams within your organization. The website does not allow anonymous access. Authentication is performed using an Azure Active Directory (Azure AD) app named internal.

The website has the following authentication requirements:
Azure AD users must be able to login to the website.
Personalization of the website must be based on membership in Active Directory groups.
You need to configure the application's manifest to meet the authentication requirements.
How should you configure the manifest? To answer, select the appropriate configuration in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:

Section:
Explanation:
Box 1: groupMembershipClaims
Scenario: Personalization of the website must be based on membership in Active Directory groups.

Group claims can also be configured in the Optional Claims section of the Application Manifest.
Enable group membership claims by changing the groupMembershipClaim
The valid values are:
"All"
"SecurityGroup"
"DistributionList"
"DirectoryRole"
Here we need to mention that we want to get the groups for the users. Hence we need to mention to set the groupMembershipClaims property to All.
Box 2: oauth2AllowImplicitFlow
Azure AD users must be able to login to the website. auth2Permissions can only accept collections value like an array, not a boolean. oauth2AllowImplicitFlow accepts boolean value.Here from the list of options given, if we want the application to fetch the required tokens , we would need to allow Implicit Flow.

QUESTION 17
You develop an app that allows users to upload photos and videos to Azure storage. The app uses a storage REST API call to upload the media to a blob storage account named Account1. You have blob storage containers named
Container1 and Container2.
Uploading of videos occurs on an irregular basis.
You need to copy specific blobs from Container1 to Container2 when a new video is uploaded.
What should you do?

A. Copy blobs to Container2 by using the Put Blob operation of the Blob Service REST API
B. Create an Event Grid topic that uses the Start-AzureStorageBlobCopy cmdlet
C. Use AzCopy with the Snapshot switch to copy blobs to Container2
D. Download the blob to a virtual machine and then upload the blob to Container2

Correct Answer: B
Section:
Explanation:
The Start-AzureStorageBlobCopy cmdlet starts to copy a blob.
Example 1: Copy a named blob
C:\PS>Start-AzureStorageBlobCopy -SrcBlob "ContosoPlanning2015" -DestContainer "ContosoArchives" -SrcContainer "ContosoUploads"
This command starts the copy operation of the blob named ContosoPlanning2015 from the container named ContosoUploads to the container named ContosoArchives.
Reference:
https://docs.microsoft.com/en-us/powershell/module/azure.storage/start-azurestorageblobcopy?view=azurermps-6.13.0

QUESTION 18
You are developing an ASP.NET Core website that uses Azure FrontDoor. The website is used to build custom weather data sets for researchers. Data sets are downloaded by users as Comma Separated Value (CSV) files. The data is refreshed every 10 hours.
Specific files must be purged from the FrontDoor cache based upon Response Header values.
You need to purge individual assets from the Front Door cache.
Which type of cache purge should you use?

A. single path
B. wildcard
C. root domain

Correct Answer: A
Section:
Explanation:

These formats are supported in the lists of paths to purge:
Single path purge: Purge individual assets by specifying the full path of the asset (without the protocol and domain), with the file extension, for example, /pictures/strasbourg.png;
Wildcard purge: Asterisk (*) may be used as a wildcard. Purge all folders, subfolders, and files under an endpoint with /* in the path or purge all subfolders and files under a specific folder by specifying the folder followed by /*, for example, /pictures/*.
Root domain purge: Purge the root of the endpoint with "/" in the path.
Reference:
https://docs.microsoft.com/en-us/azure/frontdoor/front-door-caching

QUESTION 19
You are developing a Java application that uses Cassandra to store key and value data. You plan to use a new Azure Cosmos DB resource and the Cassandra API in the application. You create an Azure Active Directory (Azure AD) group named Cosmos DB Creators to enable provisioning of Azure Cosmos accounts, databases, and containers.
The Azure AD group must not be able to access the keys that are required to access the data.
You need to restrict access to the Azure AD group.
Which role-based access control should you use?

A. DocumentDB Accounts Contributor
B. Cosmos Backup Operator
C. Cosmos DB Operator
D. Cosmos DB Account Reader

Correct Answer: C
Section:
Explanation:
Azure Cosmos DB now provides a new RBAC role, Cosmos DB Operator. This new role lets you provision Azure Cosmos accounts, databases, and containers, but can't access the keys that are required to access the data. This role is intended for use in scenarios where the ability to grant access to Azure Active Directory service principals to manage deployment operations for Cosmos DB is needed, including the account, database, and containers.
Reference:
https://azure.microsoft.com/en-us/updates/azure-cosmos-db-operator-role-for-role-based-access-control-rbac-is-now-available/

QUESTION 20
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.
You are developing a website that will run as an Azure Web App. Users will authenticate by using their Azure Active Directory (Azure AD) credentials.
You plan to assign users one of the following permission levels for the website: admin, normal, and reader. A user's Azure AD group membership must be used to determine the permission level.
You need to configure authorization.
Solution: Configure the Azure Web App for the website to allow only authenticated requests and require Azure AD log on.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section:
Explanation:
Instead in the Azure AD application's manifest, set value of the groupMembershipClaims option to All.
Reference:
https://blogs.msdn.microsoft.com/waws/2017/03/13/azure-app-service-authentication-aad-groups/

QUESTION 21

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.
You are developing a website that will run as an Azure Web App. Users will authenticate by using their Azure Active Directory (Azure AD) credentials.
You plan to assign users one of the following permission levels for the website: admin, normal, and reader. A user's Azure AD group membership must be used to determine the permission level.
You need to configure authorization.
Solution:
Create a new Azure AD application. In the application's manifest, set value of the groupMembershipClaims option to All.
In the website, use the value of the groups claim from the JWT for the user to determine permissions.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: A
Section:
Explanation:
To configure Manifest to include Group Claims in Auth Token
1. Go to Azure Active Directory to configure the Manifest. Click on Azure Active Directory, and go to App registrations to find your application:
2. Click on your application (or search for it if you have a lot of apps) and edit the Manifest by clicking on it.
3. Locate the "groupMembershipClaims" setting. Set its value to either "SecurityGroup" or "All". To help you decide which:
"SecurityGroup" - groups claim will contain the identifiers of all security groups of which the user is a member.
"All" - groups claim will contain the identifiers of all security groups and all distribution lists of which the user is a member
Now your application will include group claims in your manifest and you can use this fact in your code.
Reference:
https://blogs.msdn.microsoft.com/waws/2017/03/13/azure-app-service-authentication-aad-groups/

QUESTION 22
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.
You are developing a website that will run as an Azure Web App. Users will authenticate by using their Azure Active Directory (Azure AD) credentials.
You plan to assign users one of the following permission levels for the website: admin, normal, and reader. A user's Azure AD group membership must be used to determine the permission level.
You need to configure authorization.
Solution:
Create a new Azure AD application. In the application's manifest, define application roles that match the required permission levels for the application.
Assign the appropriate Azure AD group to each role. In the website, use the value of the roles claim from the JWT for the user to determine permissions.
Does the solution meet the goal?

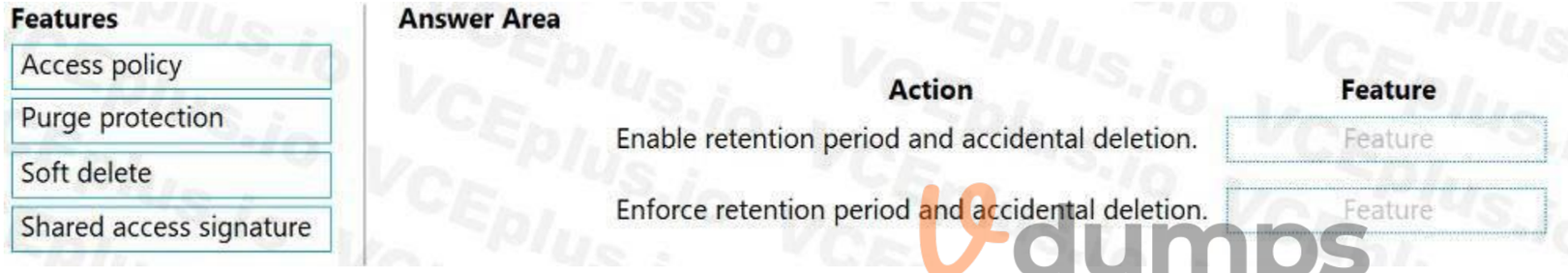
A. Yes
B. No

Correct Answer: B
Section:
Explanation:
To configure Manifest to include Group Claims in Auth Token
1. Go to Azure Active Directory to configure the Manifest. Click on Azure Active Directory, and go to App registrations to find your application:
2. Click on your application (or search for it if you have a lot of apps) and edit the Manifest by clicking on it.
3. Locate the "groupMembershipClaims" setting. Set its value to either "SecurityGroup" or "All". To help you decide which:

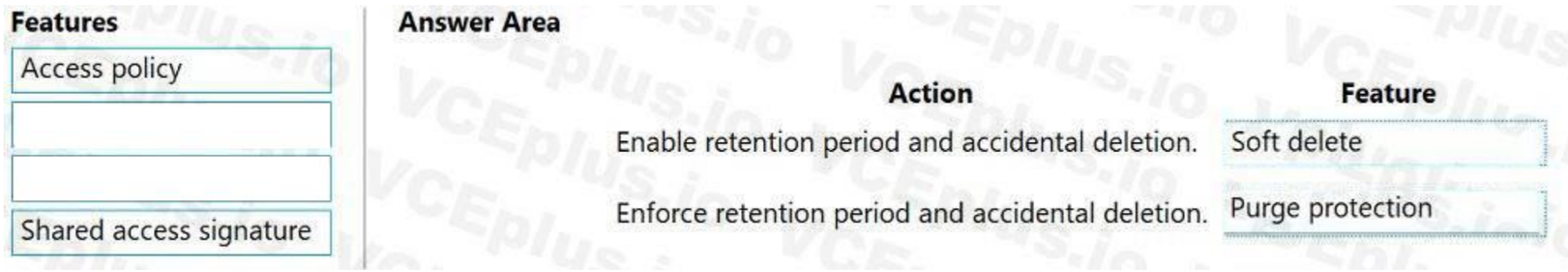
"SecurityGroup" - groups claim will contain the identifiers of all security groups of which the user is a member.
"All" - groups claim will contain the identifiers of all security groups and all distribution lists of which the user is a member
Now your application will include group claims in your manifest and you can use this fact in your code.
Reference:
https://blogs.msdn.microsoft.com/waws/2017/03/13/azure-app-service-authentication-aad-groups/

QUESTION 23
DRAG DROP
You are developing an application to securely transfer data between on-premises file systems and Azure Blob storage. The application stores keys, secrets, and certificates in Azure Key Vault. The application uses the Azure Key Vault APIs.
The application must allow recovery of an accidental deletion of the key vault or key vault objects. Key vault objects must be retained for 90 days after deletion.
You need to protect the key vault and key vault objects.
Which Azure Key Vault feature should you use? To answer, drag the appropriate features to the correct actions. Each feature 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.
NOTE: Each correct selection is worth one point.

Select and Place:



Correct Answer:



Section:
Explanation:
Box 1: Soft delete
When soft-delete is enabled, resources marked as deleted resources are retained for a specified period (90 days by default). The service further provides a mechanism for recovering the deleted object, essentially undoing the deletion.
Box 2: Purge protection
Purge protection is an optional Key Vault behavior and is not enabled by default. Purge protection can only be enabled once soft-delete is enabled.
When purge protection is on, a vault or an object in the deleted state cannot be purged until the retention period has passed. Soft-deleted vaults and objects can still be recovered, ensuring that the retention policy will be followed.
Reference:
https://docs.microsoft.com/en-us/azure/key-vault/general/soft-delete-overview

QUESTION 24
You provide an Azure API Management managed web service to clients. The back-end web service implements HTTP Strict Transport Security (HSTS).

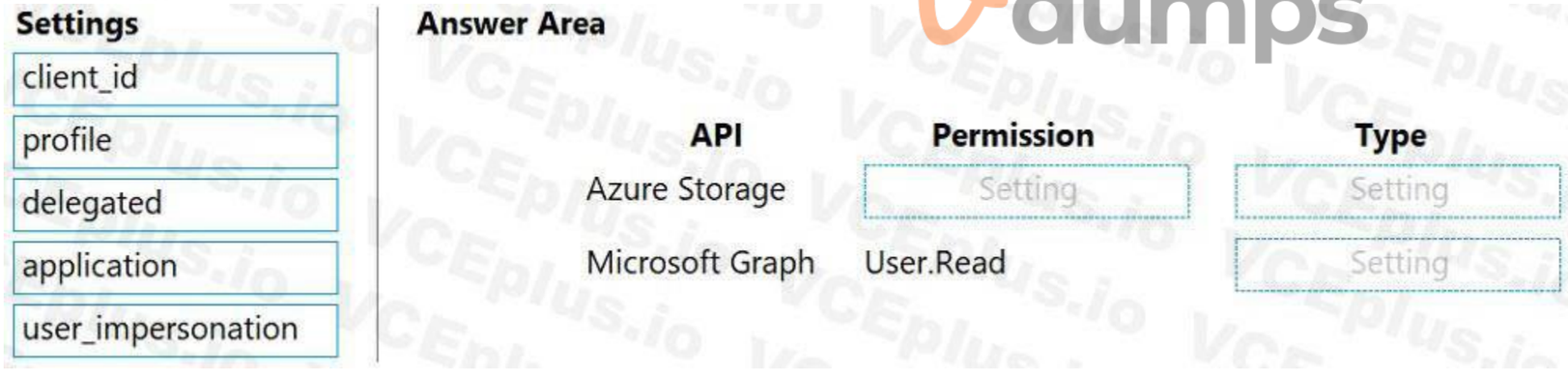
Every request to the backend service must include a valid HTTP authorization header.
You need to configure the Azure API Management instance with an authentication policy.
Which two policies can you use? Each correct answer presents a complete solution.
NOTE: Each correct selection is worth one point.

A. Basic Authentication
B. Digest Authentication
C. Certificate Authentication
D. OAuth Client Credential Grant

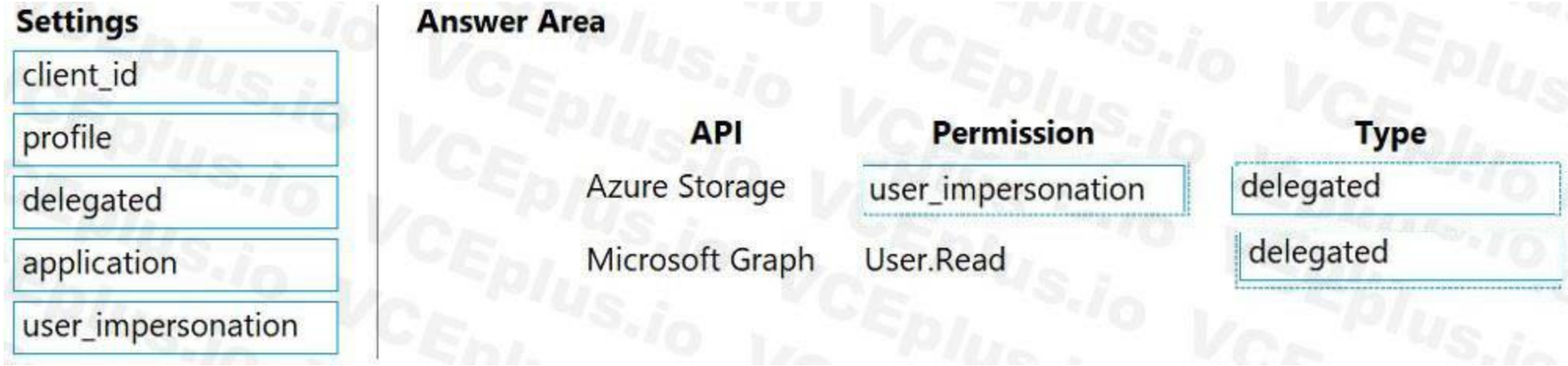
Correct Answer: A, B
Section:

QUESTION 25
DRAG DROP
You are developing an ASP.NET Core website that can be used to manage photographs which are stored in Azure Blob Storage containers.
Users of the website authenticate by using their Azure Active Directory (Azure AD) credentials.
You implement role-based access control (RBAC) role permissions on the containers that store photographs. You assign users to RBAC roles.
You need to configure the website's Azure AD Application so that user's permissions can be used with the Azure Blob containers.
How should you configure the application? To answer, drag the appropriate setting to the correct location. Each setting can 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.
NOTE: Each correct selection is worth one point.

Select and Place:



Correct Answer:



Section:
Explanation:
Box 1: user_impersonation
Box 2: delegated
Example:
1. Select the API permissions section
2. Click the Add a permission button and then:
Ensure that the My APIs tab is selected
3. In the list of APIs, select the API TodoListService-aspnetcore.
4. In the Delegated permissions section, ensure that the right permissions are checked: user_impersonation.
5. Select the Add permissions button.
Box 3: delegated
Example
1. Select the API permissions section
2. Click the Add a permission button and then,
Ensure that the Microsoft APIs tab is selected
3. In the Commonly used Microsoft APIs section, click on Microsoft Graph
4. In the Delegated permissions section, ensure that the right permissions are checked: User.Read. Use the search box if necessary.
5. Select the Add permissions button
Reference:
https://docs.microsoft.com/en-us/samples/azure-samples/active-directory-dotnet-webapp-webapi-openidconnect-aspnetcore/calling-a-web-api-in-an-aspnet-core-web-application-using-azure-ad/

QUESTION 26
HOTSPOT
You plan to deploy a new application to a Linux virtual machine (VM) that is hosted in Azure.
The entire VM must be secured at rest by using industry-standard encryption technology to address organizational security and compliance requirements.
You need to configure Azure Disk Encryption for the VM.
How should you complete the Azure CLI commands? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

```
az provider register -n Microsoft.KeyVault
resourcegroup="myResourceGroup"
az group create --name $resourcegroup --location westus
keyvault_name=myvaultname$RANDOM
az [ ▼ ] create \
```

- vm
- keyvault
- keyvault key
- vm encryption

```
    --name $keyvault_name \
    --resource-group $resourcegroup \
    --location eastus \
    --enabled-for-disk-encryption True
az [ ▼ ] create \
```

- vm
- keyvault
- keyvault key
- vm encryption

```
    --vault-name $keyvault_name \
    --name Name1 \
    --protection software
az [ ▼ ] create \
```

- vm
- keyvault
- keyvault key
- vm encryption

```
    --resource-group $resourcegroup \
    --name Name2 \
    --image Canonical:UbuntuServer:16.04-LTS:latest \
    --admin-username azureuser \
    --generate-ssh-keys \
    --data-disk-sizes-gb 5
az [ ▼ ] enable\
```

- vm
- keyvault
- keyvault key
- vm encryption

```
    --resource-group $resourcegroup \
    --name Name2 \
    --disk-encryption-keyvault $keyvault_name \
    --key-encryption-key Name1 \
    --volume-type [ ▼ ]
```

- all
- data
- os

Answer Area:

Answer Area

```
az provider register -n Microsoft.KeyVault
resourcegroup="myResourceGroup"
az group create --name $resourcegroup --location westus
keyvault_name=myvaultname$RANDOM
az [ ▼ ] create \
```

- vm
- keyvault
- keyvault key
- vm encryption

```
--name $keyvault_name \
--resource-group $resourcegroup \
--location eastus \
--enabled-for-disk-encryption True
az [ ▼ ] create \
```

- vm
- keyvault
- keyvault key
- vm encryption

```
--vault-name $keyvault_name \
--name Name1 \
--protection software
az [ ▼ ] create \
```

- vm
- keyvault
- keyvault key
- vm encryption

```
--resource-group $resourcegroup \
--name Name2 \
--image Canonical:UbuntuServer:16.04-LTS:latest \
--admin-username azureuser \
--generate-ssh-keys \
--data-disk-sizes-gb 5
az [ ▼ ] enable\
```

- vm
- keyvault
- keyvault key
- vm encryption

```
--resource-group $resourcegroup \
--name Name2 \
--disk-encryption-keyvault $keyvault_name \
--key-encryption-key Name1 \
--volume-type [ ▼ ]
```

- all
- data
- os

Section:
Explanation:
Box 1: keyvault
Create an Azure Key Vault with az keyvault create and enable the Key Vault for use with disk encryption. Specify a unique Key Vault name for keyvault_name as follows:
keyvault_name=myvaultname$RANDOM
az keyvault create \
--name $keyvault_name \
--resource-group $resourcegroup \
--location eastus \
--enabled-for-disk-encryption True
Box 2: keyvault key
The Azure platform needs to be granted access to request the cryptographic keys when the VM boots to decrypt the virtual disks. Create a cryptographic key in your Key Vault with az keyvault key create. The following example creates a key named myKey:
az keyvault key create \
--vault-name $keyvault_name \
--name myKey \
--protection software
Box 3: vm
Create a VM with az vm create. Only certain marketplace images support disk encryption. The following example creates a VM named myVM using an Ubuntu 16.04 LTS image:
az vm create \
--resource-group $resourcegroup \
--name myVM \
--image Canonical:UbuntuServer:16.04-LTS:latest \
--admin-username azureuser \
--generate-ssh-keys \
Box 4: vm encryption
Encrypt your VM with az vm encryption enable:
az vm encryption enable \
--resource-group $resourcegroup \
--name myVM \
--disk-encryption-keyvault $keyvault_name \
--key-encryption-key myKey \
--volume-type all
Note: seems to an error in the question. Should have enable instead of create.
Box 5: all
Encrypt both data and operating system.
Reference:
https://docs.microsoft.com/en-us/azure/virtual-machines/linux/disk-encryption-cli-quickstart

QUESTION 27
Your company is developing an Azure API hosted in Azure.
You need to implement authentication for the Azure API to access other Azure resources. You have the following requirements:
All API calls must be authenticated.
Callers to the API must not send credentials to the API.
Which authentication mechanism should you use?

A. Basic
B. Anonymous
C. Managed identity

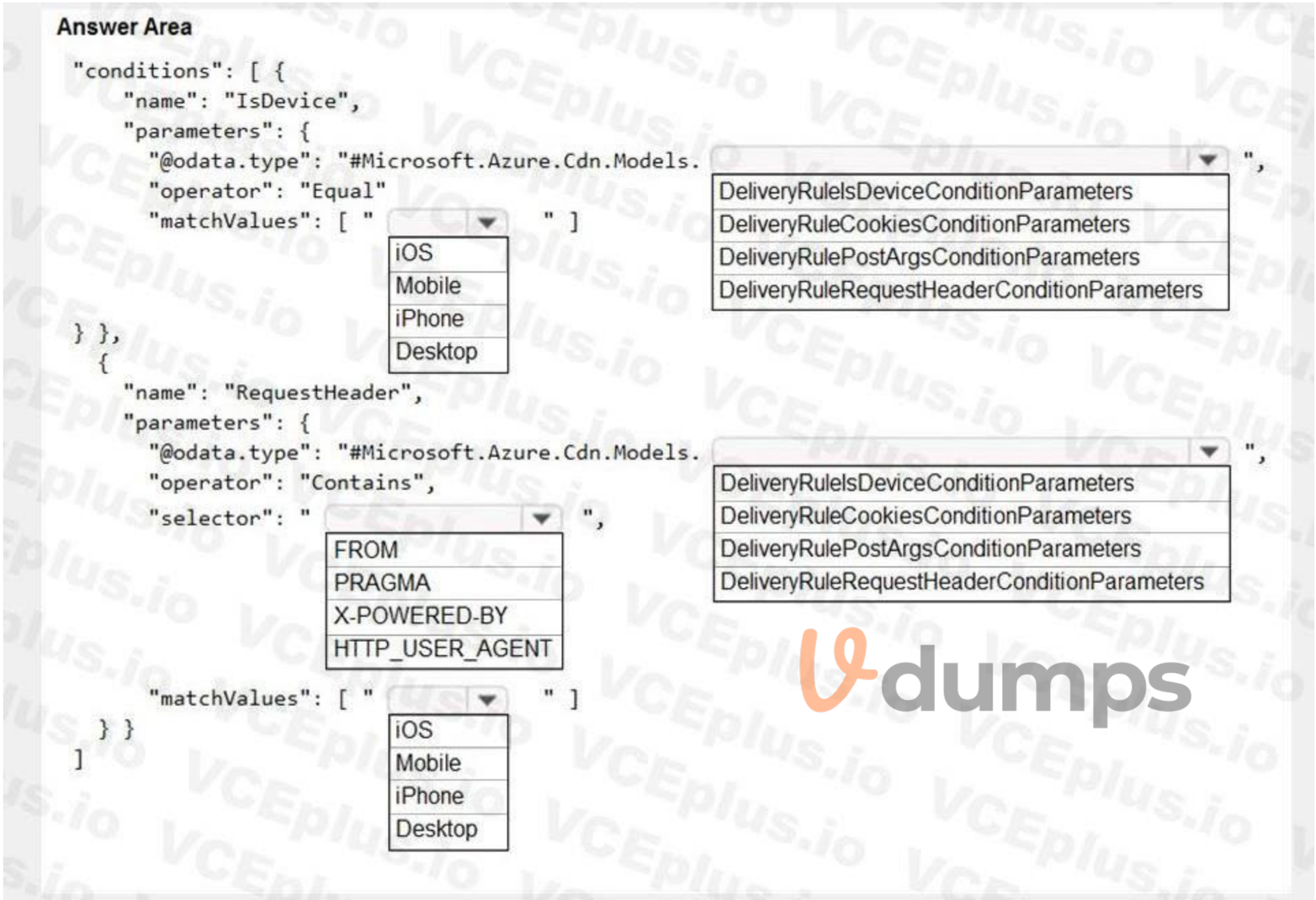
D. Client certificate

Correct Answer: C
Section:
Explanation:
Azure Active Directory Managed Service Identity (MSI) gives your code an automatically managed identity for authenticating to Azure services, so that you can keep credentials out of your code.
Note: Use the authentication-managed-identity policy to authenticate with a backend service using the managed identity. This policy essentially uses the managed identity to obtain an access token from Azure Active Directory for accessing the specified resource. After successfully obtaining the token, the policy will set the value of the token in the Authorization header using the Bearer scheme.
Incorrect Answers:
A: Use the authentication-basic policy to authenticate with a backend service using Basic authentication. This policy effectively sets the HTTP Authorization header to the value corresponding to the credentials provided in the policy.
B: Anonymous is no authentication at all.
D: Your code needs credentials to authenticate to cloud services, but you want to limit the visibility of those credentials as much as possible. Ideally, they never appear on a developer's workstation or get checked-in to source control. Azure Key Vault can store credentials securely so they aren't in your code, but to retrieve them you need to authenticate to Azure Key Vault. To authenticate to Key Vault, you need a credential! A classic bootstrap problem.
Reference:
https://azure.microsoft.com/en-us/blog/keep-credentials-out-of-code-introducing-azure-ad-managed-service-identity/
https://docs.microsoft.com/en-us/azure/api-management/api-management-authentication-policies

QUESTION 28
HOTSPOT
You are building a website that is used to review restaurants. The website will use an Azure CDN to improve performance and add functionality to requests.
You build and deploy a mobile app for Apple iPhones. Whenever a user accesses the website from an iPhone, the user must be redirected to the app store.
You need to implement an Azure CDN rule that ensures that iPhone users are redirected to the app store.
How should you complete the Azure Resource Manager template? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

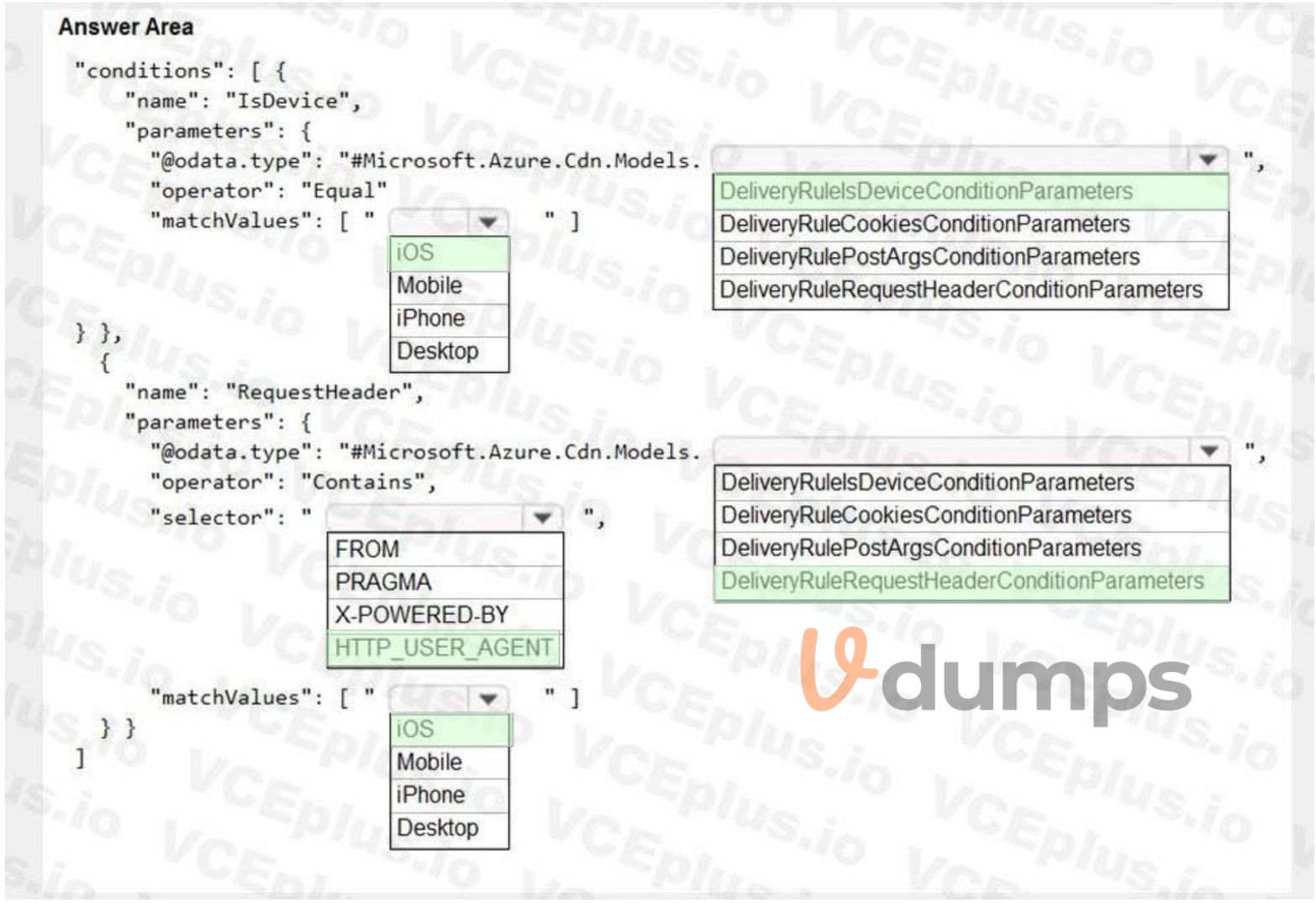
Hot Area:

Answer Area



Answer Area:

Answer Area



Section:

Explanation:

Box 1: iOS

Azure AD Conditional Access supports the following device platforms:

Android

iOS

Windows Phone

Windows

macOS

Box 2: DeliveryRuleIsDeviceConditionParameters

The DeliveryRuleIsDeviceCondition defines the IsDevice condition for the delivery rule. parameters defines the parameters for the condition.

Box 3: HTTP_USER_AGENT

Incorrect Answers:

The Pragma HTTP/1.0 general header is an implementation-specific header that may have various effects along the request-response chain. It is used for backwards compatibility with HTTP/1.0 caches.

"X-Powered-By" is a common non-standard HTTP response header (most headers prefixed with an 'X-' are non-standard).

Box 4: DeliveryRuleRequestHeaderConditionParameters

DeliveryRuleRequestHeaderCondition defines the RequestHeader condition for the delivery rule. parameters defines the parameters for the condition.
Box 5: iOS
The Require approved client app requirement only supports the iOS and Android for device platform condition.
Reference:
https://docs.microsoft.com/en-us/azure/active-directory/conditional-access/concept-conditional-access-conditions
https://docs.microsoft.com/en-us/azure/active-directory/conditional-access/concept-conditional-access-grant

QUESTION 29
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.
You are developing a website that will run as an Azure Web App. Users will authenticate by using their Azure Active Directory (Azure AD) credentials.
You plan to assign users one of the following permission levels for the website: admin, normal, and reader. A user's Azure AD group membership must be used to determine the permission level.
You need to configure authorization.
Solution:
Configure and use Integrated Windows Authentication in the website.
In the website, query Microsoft Graph API to load the group to which the user is a member.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section:
Explanation:
Microsoft Graph is a RESTful web API that enables you to access Microsoft Cloud service resources.
Instead in the Azure AD application's manifest, set value of the groupMembershipClaims option to All. In the website, use the value of the groups claim from the JWT for the user to determine permissions.
Reference:
https://blogs.msdn.microsoft.com/waws/2017/03/13/azure-app-service-authentication-aad-groups/

QUESTION 30
DRAG DROP
You are developing an Azure solution.
You need to develop code to access a secret stored in Azure Key Vault.
How should you complete the code segment? To answer, drag the appropriate code segments to the correct locations. Each code 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.
NOTE: Each correct selection is worth one point.

Select and Place:

Correct Answer:

Section:

Explanation:
Box 1: SecretClient
Box 2: DefaultAzureCredential
In below example, the name of your key vault is expanded to the key vault URI, in the format "https://<your-key-vault-name>.vault.azure.net". This example is using 'DefaultAzureCredential()' class from Azure Identity Library, which allows to use the same code across different environments with different options to provide identity.
string keyVaultName = Environment.GetEnvironmentVariable("KEY_VAULT_NAME"); var kvUri = "https://" + keyVaultName + ".vault.azure.net";
var client = new SecretClient(new Uri(kvUri), new DefaultAzureCredential());
Reference:
https://docs.microsoft.com/en-us/azure/key-vault/secrets/quick-create-net

QUESTION 31
You are developing an Azure App Service REST API.
The API must be called by an Azure App Service web app. The API must retrieve and update user profile information stored in Azure Active Directory (Azure AD).
You need to configure the API to make the updates.
Which two tools should you use? Each correct answer presents part of the solution.
NOTE: Each correct selection is worth one point.

A. Microsoft Graph API
B. Microsoft Authentication Library (MSAL)
C. Azure API Management
D. Microsoft Azure Security Center
E. Microsoft Azure Key Vault SDK

Correct Answer: A, C
Section:
Explanation:
A: You can use the Azure AD REST APIs in Microsoft Graph to create unique workflows between Azure AD resources and third-party services.
Enterprise developers use Microsoft Graph to integrate Azure AD identity management and other services to automate administrative workflows, such as employee onboarding (and termination), profile maintenance, license deployment, and more.
C: API Management (APIM) is a way to create consistent and modern API gateways for existing back-end services.
API Management helps organizations publish APIs to external, partner, and internal developers to unlock the potential of their data and services.
Reference:
https://docs.microsoft.com/en-us/graph/azuread-identity-access-management-concept-overview

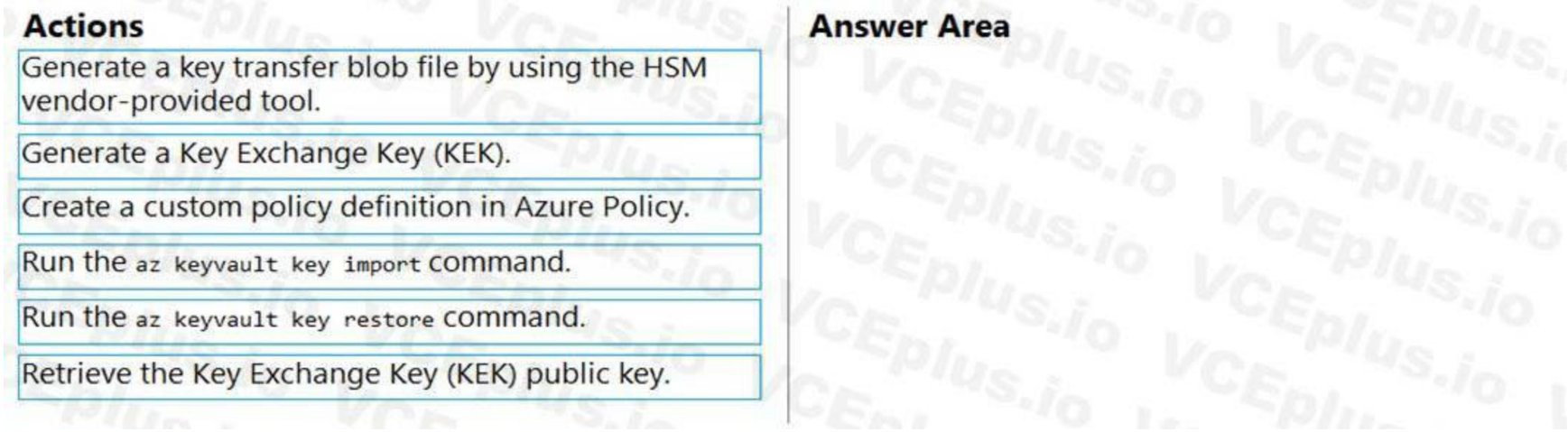
QUESTION 32
You develop a REST API. You implement a user delegation SAS token to communicate with Azure Blob storage.
The token is compromised.
You need to revoke the token.
What are two possible ways to achieve this goal? Each correct answer presents a complete solution.
NOTE: Each correct selection is worth one point.

A. Revoke the delegation keys
B. Delete the stored access policy.
C. Regenerate the account key.
D. Remove the role assignment for the security principle.

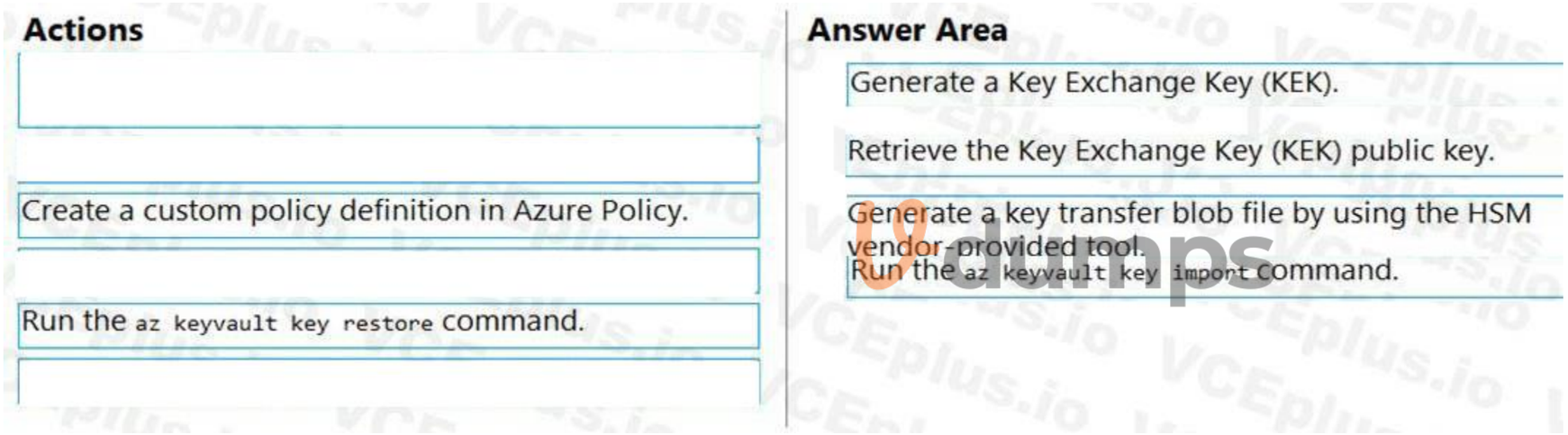
Correct Answer: A, B
Section:
Explanation:
A: Revoke a user delegation SAS
To revoke a user delegation SAS from the Azure CLI, call the az storage account revoke-delegation-keys command. This command revokes all of the user delegation keys associated with the specified storage account. Any shared access signatures associated with those keys are invalidated.
B: To revoke a stored access policy, you can either delete it, or rename it by changing the signed identifier. Changing the signed identifier breaks the associations between any existing signatures and the stored access policy. Deleting or renaming the stored access policy immediately effects all of the shared access signatures associated with it.
Reference:
https://github.com/MicrosoftDocs/azure-docs/blob/master/articles/storage/blobs/storage-blob-user-delegation-sas-create-cli.md
https://docs.microsoft.com/en-us/rest/api/storageservices/define-stored-access-policy#modifying-or-revoking-a-stored-access-policy

QUESTION 33
DRAG DROP
You are developing an Azure-hosted application that must use an on-premises hardware security module (HSM) key.
The key must be transferred to your existing Azure Key Vault by using the Bring Your Own Key (BYOK) process.
You need to securely transfer the key to Azure Key Vault.
Which four actions should you perform in sequence? To answer, 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:



Section:

Explanation:

To perform a key transfer, a user performs following steps:

Generate KEK.

Retrieve the public key of the KEK.

Using HSM vendor provided BYOK tool - Import the KEK into the target HSM and exports the Target Key protected by the KEK.

Import the protected Target Key to Azure Key Vault.

Step 1: Generate a Key Exchange Key (KEK).

Step 2: Retrieve the Key Exchange Key (KEK) public key.

Step 3: Generate a key transfer blob file by using the HSM vendor-provided tool.

Generate key transfer blob using HSM vendor provided BYOK tool

Step 4: Run the az keyvault key import command

Upload key transfer blob to import HSM-key.

Customer will transfer the Key Transfer Blob (".byok" file) to an online workstation and then run a az keyvault key import command to import this blob as a new HSM-backed key into Key Vault.

To import an RSA key use this command:

az keyvault key import

Reference:

https://docs.microsoft.com/en-us/azure/key-vault/keys/byok-specification

QUESTION 34
You deploy an Azure App Service web app. You create an app registration for the app in Azure Active Directory (Azure AD) and Twitter.
The app must authenticate users and must use SSL for all communications. The app must use Twitter as the identity provider.
You need to validate the Azure AD request in the app code.
What should you validate?

A. ID token header
B. ID token signature
C. HTTP response code
D. Tenant ID

Correct Answer: A
Section:
Explanation:
Reference:
https://docs.microsoft.com/en-us/azure/storage/common/storage-auth-aad-app?tabs=dotnet

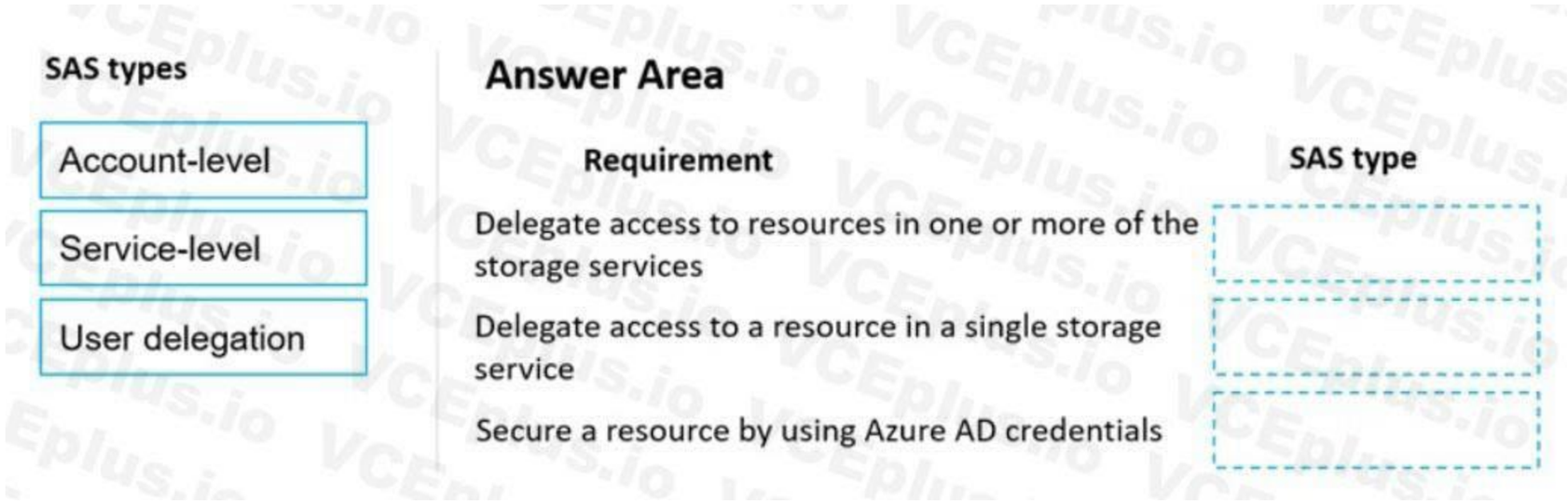
QUESTION 35
A development team is creating a new REST API. The API will store data in Azure Blob storage. You plan to deploy the API to Azure App Service.
Developers must access the Azure Blob storage account to develop the API for the next two months. The Azure Blob storage account must not be accessible by the developers after the two-month time period.
You need to grant developers access to the Azure Blob storage account.
What should you do?

A. Generate a shared access signature (SAS) for the Azure Blob storage account and provide the SAS to all developers.
B. Create and apply a new lifecycle management policy to include a last accessed date value. Apply the policy to the Azure Blob storage account.
C. Provide all developers with the access key for the Azure Blob storage account. Update the API to include the Coordinated Universal Time (UTC) timestamp for the request header.
D. Grant all developers access to the Azure Blob storage account by assigning role-based access control (RBAC) roles.

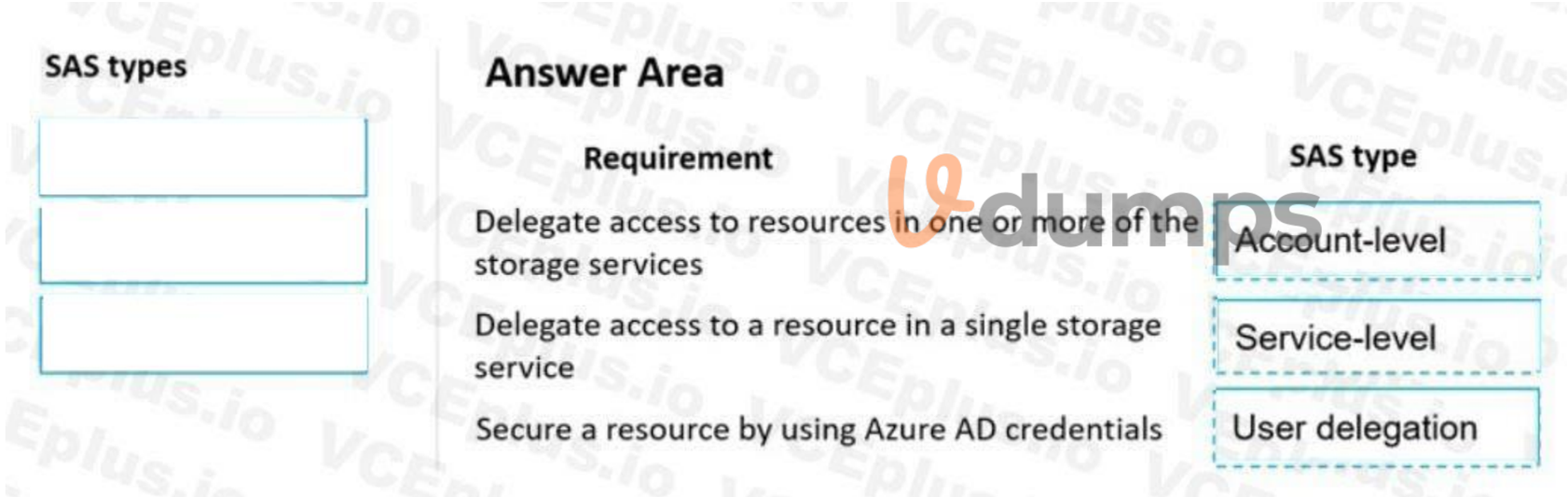
Correct Answer: A
Section:
Explanation:
Reference:
https://docs.microsoft.com/en-us/azure/storage/common/storage-sas-overview

QUESTION 36
DRAG DROP
An organization plans to deploy Azure storage services.
You need to configure shared access signature (SAS) for granting access to Azure Storage.
Which SAS types should you use? To answer, drag the appropriate SAS types to the correct requirements. Each SAS type 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.
NOTE: Each correct selection is worth one point.

Select and Place:



Correct Answer:



Section:
Explanation:
Reference:
https://docs.microsoft.com/en-us/azure/storage/common/storage-sas-overview

QUESTION 37
HOTSPOT
You are developing an ASP.NET Core app that includes feature flags which are managed by Azure App Configuration. You create an Azure App Configuration store named AppFeatureFlagStore that contains a feature flag named Export.
You need to update the app to meet the following requirements:
Use the Export feature in the app without requiring a restart of the app.
Validate users before users are allowed access to secure resources.
Permit users to access secure resources.
How should you complete the code segment? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area:

Answer Area

```
public void Configure(IApplicationBuilder app, IWebHostEnvironment env)
{
if (env.IsDevelopment())
{
   app.UseDeveloperExceptionPage();
{
else
{
   app.UseExceptionHandler("/Error");
}

app.                                    ();
```

- UseAuthentication
- UseStaticFiles
- UseSession
- UseCookiePolicy

```
app.                                    ();
```

- UseAuthorization
- UseHttpsRedirection
- UseSession
- UseCookiePolicy

```
app.                                    ();
```

- UseAzureAppConfiguration
- UseRequestLocalization
- UseCors
- UseStaticFiles

```
app.UseEndpoint(endpoints =>
{
   endpoints.MapRazorPages();
});
}
```

Section:
Explanation:
Box 1: UseAuthentication
Need to validate users before users are allowed access to secure resources.
UseAuthentication adds the AuthenticationMiddleware to the specified IApplicationBuilder, which enables authentication capabilities.
Box 2: UseAuthorization
Need to permit users to access secure resources.

UseAuthorization adds the AuthorizationMiddleware to the specified IApplicationBuilder, which enables authorization capabilities.
Box 3: UseStaticFiles
Need to use the Export feature in the app without requiring a restart of the app.
UseStaticFiles enables static file serving for the current request path
Reference:
https://docs.microsoft.com/en-us/dotnet/api/microsoft.aspnetcore.builder.iapplicationbuilder?view=aspnetcore-5.0

QUESTION 38
You have an application that includes an Azure Web app and several Azure Function apps. Application secrets including connection strings and certificates are stored in Azure Key Vault.
Secrets must not be stored in the application or application runtime environment. Changes to Azure Active Directory (Azure AD) must be minimized.
You need to design the approach to loading application secrets.
What should you do?

A. Create a single user-assigned Managed Identity with permission to access Key Vault and configure each App Service to use that Managed Identity.
B. Create a single Azure AD Service Principal with permission to access Key Vault and use a client secret from within the App Services to access Key Vault.
C. Create a system assigned Managed Identity in each App Service with permission to access Key Vault.
D. Create an Azure AD Service Principal with Permissions to access Key Vault for each App Service and use a certificate from within the App Services to access Key Vault.

Correct Answer: C
Section:

QUESTION 39
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.
You are developing a medical records document management website. The website is used to store scanned copies of patient intake forms.
If the stored intake forms are downloaded from storage by a third party, the contents of the forms must not be compromised.
You need to store the intake forms according to the requirements.
Solution: Create an Azure Key Vault key named skey. Encrypt the intake forms using the public key portion of skey. Store the encrypted data in Azure Blob storage.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: A
Section:

QUESTION 40
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.
You are developing a medical records document management website. The website is used to store scanned copies of patient intake forms.
If the stored intake forms are downloaded from storage by a third party, the contents of the forms must not be compromised.
You need to store the intake forms according to the requirements.
Solution: Create an Azure Cosmos DB database with Storage Service Encryption enabled. Store the intake forms in the Azure Cosmos DB database.
Does the solution meet the goal?

A. Yes
B. No

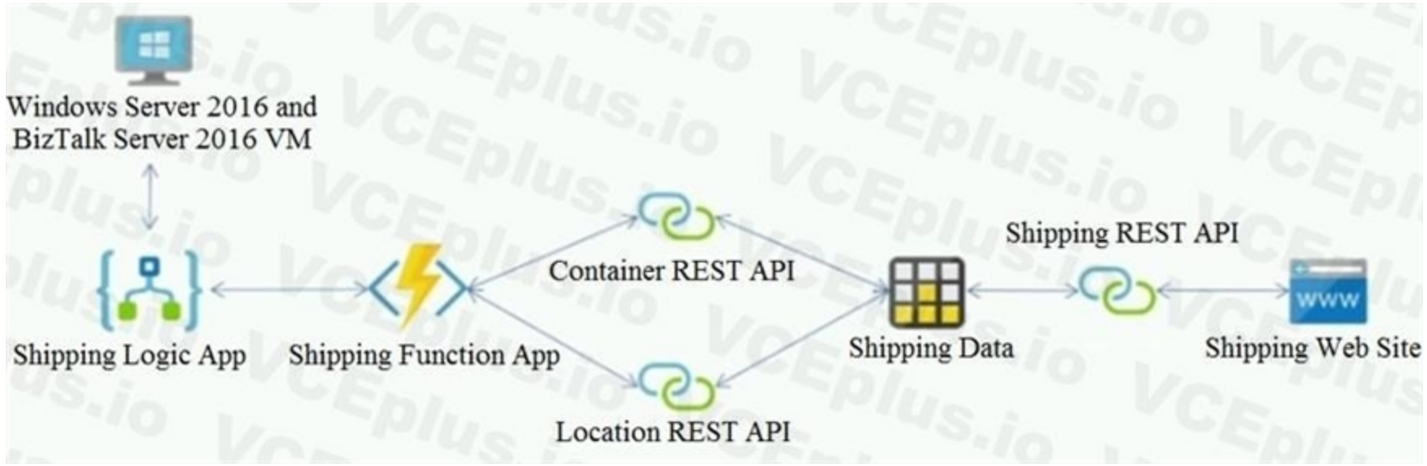
Correct Answer: B
Section:
Explanation:
Instead use an Azure Key vault and public key encryption. Store the encrypted from in Azure Storage Blob storage.

QUESTION 41
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.
You are developing a medical records document management website. The website is used to store scanned copies of patient intake forms.
If the stored intake forms are downloaded from storage by a third party, the contents of the forms must not be compromised.
You need to store the intake forms according to the requirements.
Solution: Store the intake forms as Azure Key Vault secrets.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section:
Explanation:
Instead use an Azure Key vault and public key encryption. Store the encrypted from in Azure Storage Blob storage.

01 - Connect to and consume Azure services and third-party services
Case study
This is a case study. Case studies are not timed separately. You can use as much exam time as you would like to complete each case. However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.
To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other questions in this case study.
At the end of this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.
To start the case study
To display the first question in this case study, click the Next button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. When you are ready to answer a question, click the Question button to return to the question.
Current environment
Windows Server 2016 virtual machine
This virtual machine (VM) runs BizTalk Server 2016. The VM runs the following workflows:
Ocean Transport - This workflow gathers and validates container information including container contents and arrival notices at various shipping ports.
Inland Transport - This workflow gathers and validates trucking information including fuel usage, number of stops, and routes.
The VM supports the following REST API calls:
Container API - This API provides container information including weight, contents, and other attributes.
Location API - This API provides location information regarding shipping ports of call and trucking stops.
Shipping REST API - This API provides shipping information for use and display on the shipping website.
Shipping Data
The application uses MongoDB JSON document storage database for all container and transport information.
Shipping Web Site
The site displays shipping container tracking information and container contents. The site is located at http://shipping.wideworldimporters.com/
Proposed solution
The on-premises shipping application must be moved to Azure. The VM has been migrated to a new Standard_D16s_v3 Azure VM by using Azure Site Recovery and must remain running in Azure to complete the BizTalk component migrations.
You create a Standard_D16s_v3 Azure VM to host BizTalk Server. The Azure architecture diagram for the proposed solution is shown below:

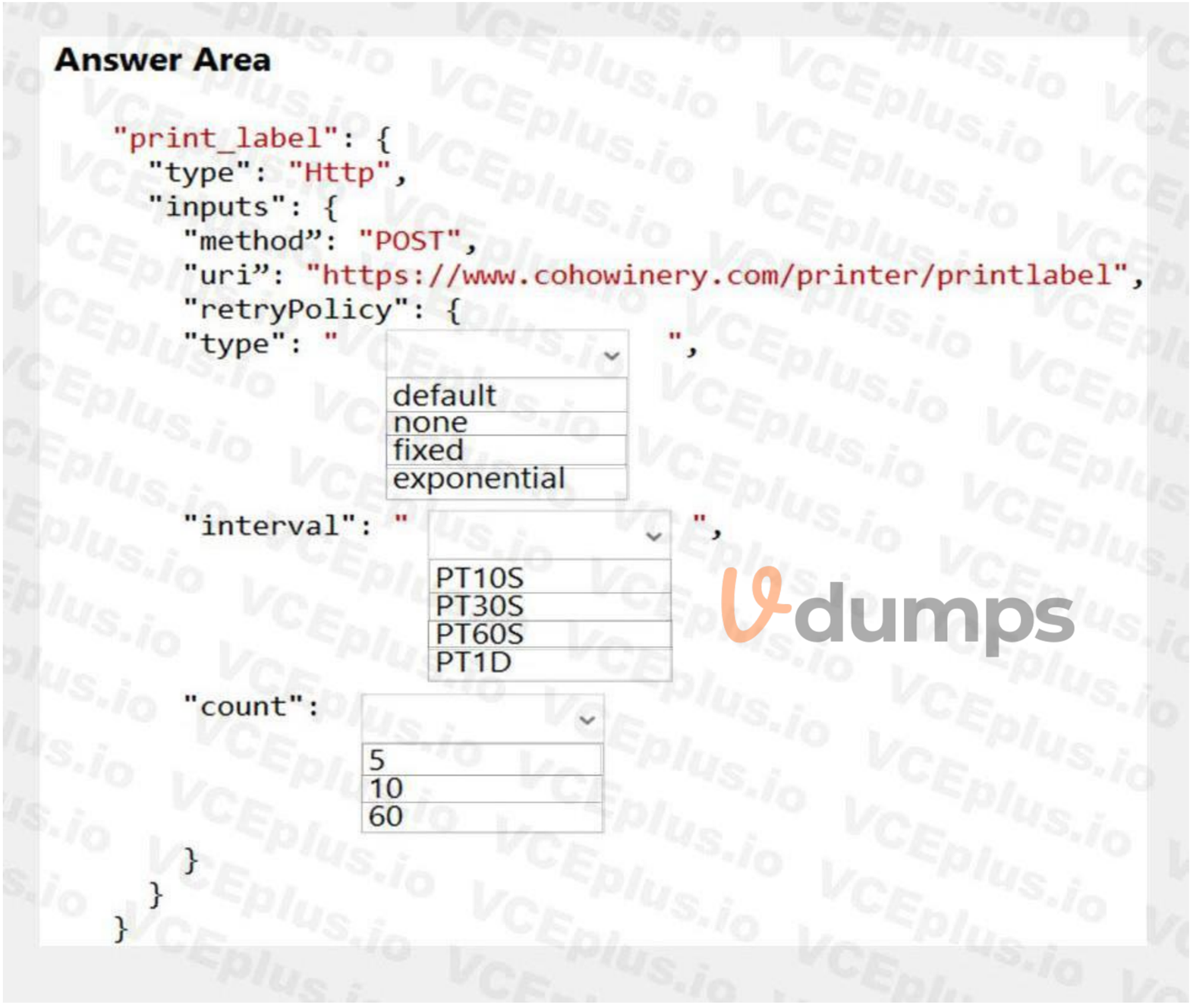


Requirements
Shipping Logic app
The Shipping Logic app must meet the following requirements:
Support the ocean transport and inland transport workflows by using a Logic App.
Support industry-standard protocol X12 message format for various messages including vessel content details and arrival notices.
Secure resources to the corporate VNet and use dedicated storage resources with a fixed costing model.
Maintain on-premises connectivity to support legacy applications and final BizTalk migrations.
Shipping Function app
Implement secure function endpoints by using app-level security and include Azure Active Directory (Azure AD).
REST APIs
The REST API's that support the solution must meet the following requirements:
Secure resources to the corporate VNet.
Allow deployment to a testing location within Azure while not incurring additional costs.
Automatically scale to double capacity during peak shipping times while not causing application downtime.
Minimize costs when selecting an Azure payment model.
Shipping data
Data migration from on-premises to Azure must minimize costs and downtime.
Shipping website
Use Azure Content Delivery Network (CDN) and ensure maximum performance for dynamic content while minimizing latency and costs.
Issues
Windows Server 2016 VM
The VM shows high network latency, jitter, and high CPU utilization. The VM is critical and has not been backed up in the past. The VM must enable a quick restore from a 7-day snapshot to include in-place restore of disks in case of failure.
Shipping website and REST APIs
The following error message displays while you are testing the website:
Failed to load http://test-shippingapi.wideworldimporters.com/: No 'Access-Control-Allow-Origin' header is present on the requested resource. Origin 'http:// test.wideworldimporters.com/' is therefore not allowed access.

QUESTION 1
HOTSPOT
You need to update the order workflow to address the issue when calling the Printer API App.
How should you complete the code? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

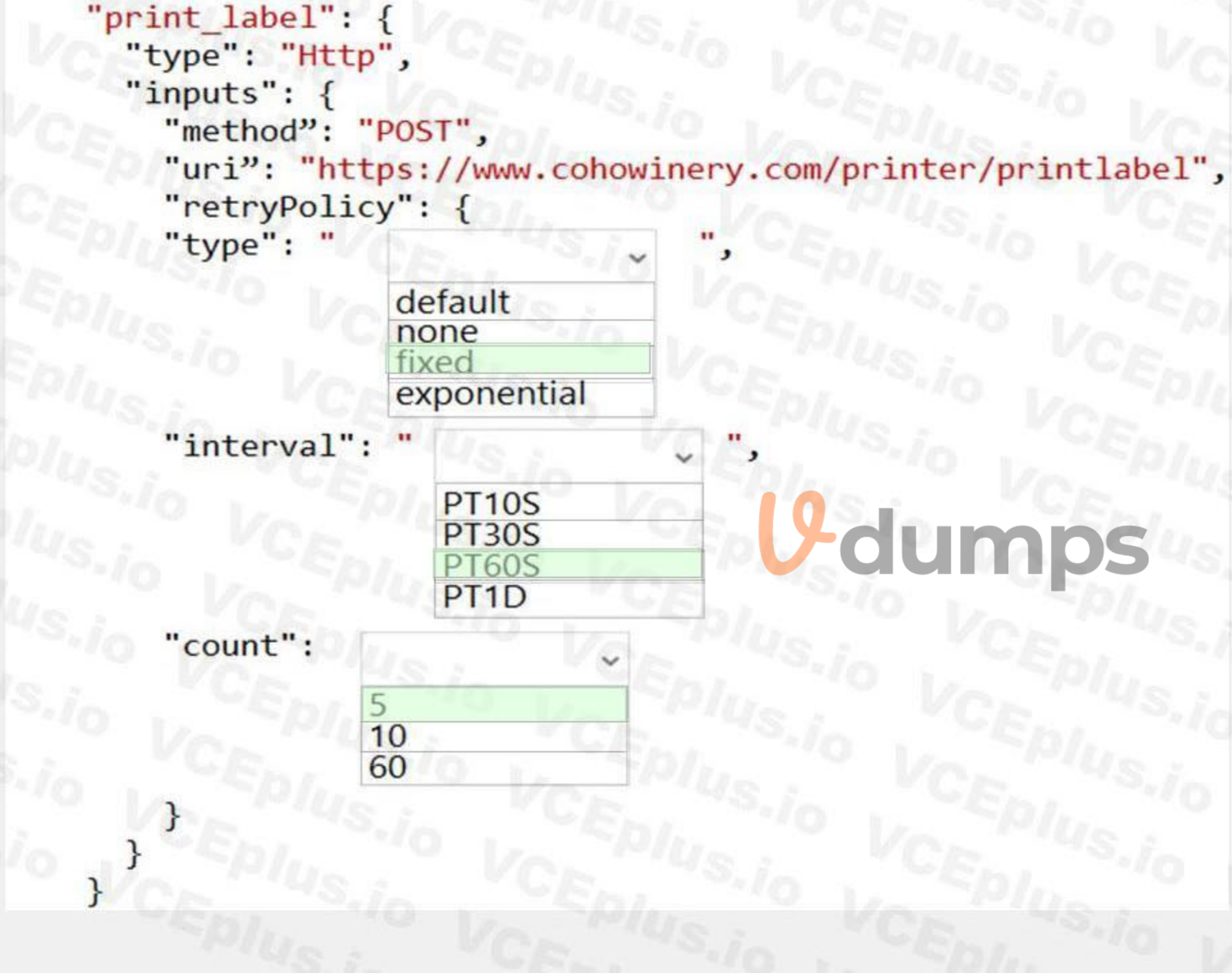
Hot Area:

Answer Area



Answer Area:

Answer Area



Section:
Explanation:
Box 1: fixed
The 'Default' policy does 4 exponential retries and from my experience the interval times are often too short in situations.
Box 2: PT60S
We could set a fixed interval, e.g. 5 retries every 60 seconds (PT60S).
PT60S is 60 seconds.
Scenario: Calls to the Printer API App fail periodically due to printer communication timeouts.

Printer communication timeouts occur after 10 seconds. The label printer must only receive up to 5 attempts within one minute.
Box 3: 5
Reference:
https://michalsacewicz.com/error-handling-in-power-automate/

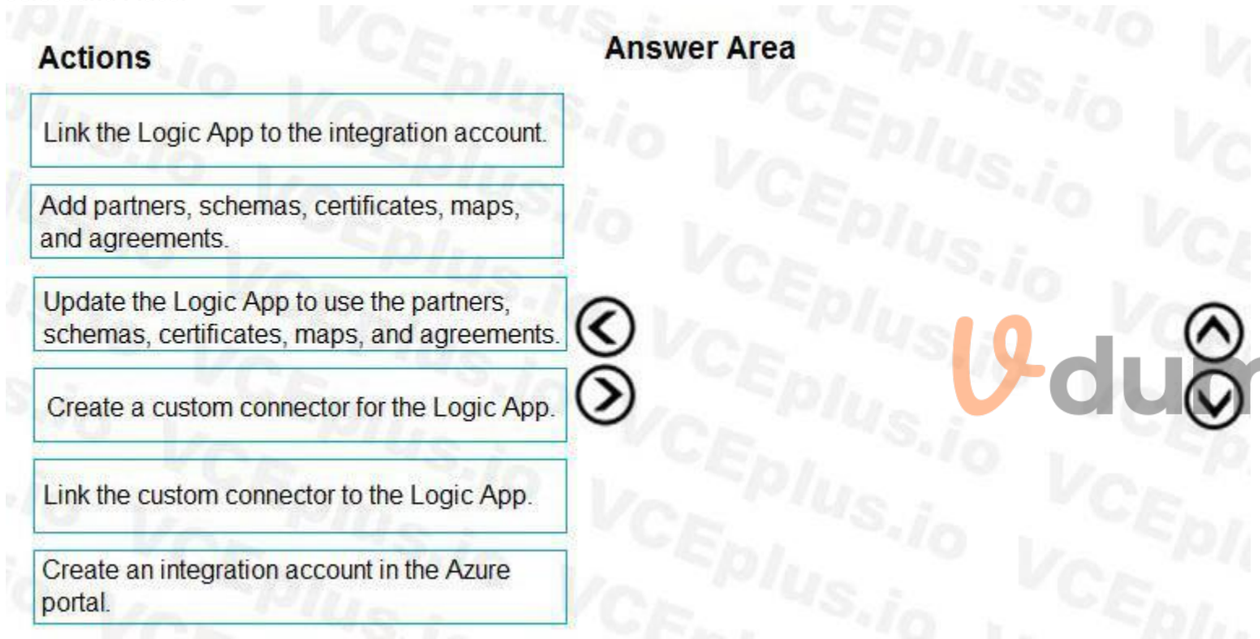
QUESTION 2

DRAG DROP

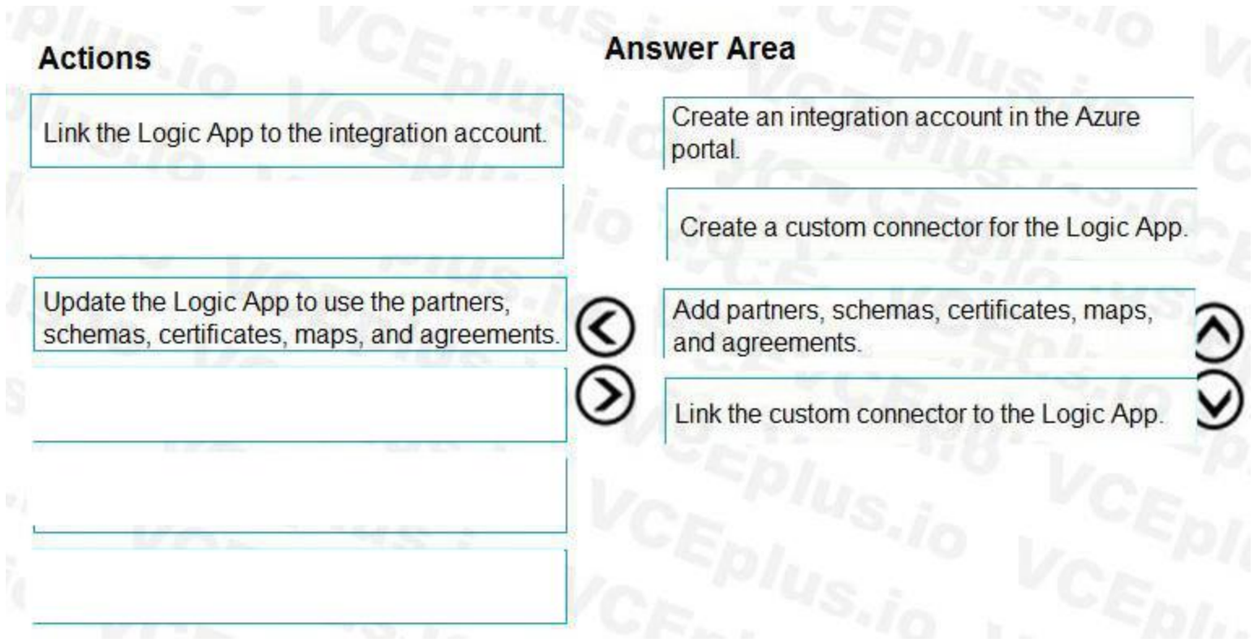
You need to support the message processing for the ocean transport workflow.

Which four actions should you perform in sequence? To answer, 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:



Section:
Explanation:
Step 1: Create an integration account in the Azure portal You can define custom metadata for artifacts in integration accounts and get that metadata during runtime for your logic app to use. For example, you can provide metadata for artifacts, such as partners, agreements, schemas, and maps -all store metadata using key-value pairs.
Step 2: Link the Logic App to the integration account
A logic app that's linked to the integration account and artifact metadata you want to use.
Step 3: Add partners, schemas, certificates, maps, and agreements
Step 4: Create a custom connector for the Logic App.
Reference:
https://docs.microsoft.com/bs-latn-ba/azure/logic-apps/logic-apps-enterprise-integration-metadata

QUESTION 3
You need to troubleshoot the order workflow.
Which two actions should you perform? Each correct answer presents part of the solution.
NOTE: Each correct selection is worth one point.

A. Review the API connections.
B. Review the activity log.
C. Review the run history.
D. Review the trigger history.

Correct Answer: C, D
Section:

02 - Connect to and consume Azure services and third-party services

Case study

This is a case study. Case studies are not timed separately. You can use as much exam time as you would like to complete each case. However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.

To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is

described in the case study. Each question is independent of the other questions in this case study.

At the end of this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.

To start the case study

To display the first question in this case study, click the Next button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. When you are ready to answer a question, click the Question button to return to the question.

Background

City Power & Light company provides electrical infrastructure monitoring solutions for homes and businesses. The company is migrating solutions to Azure.

Current environment

Architecture overview

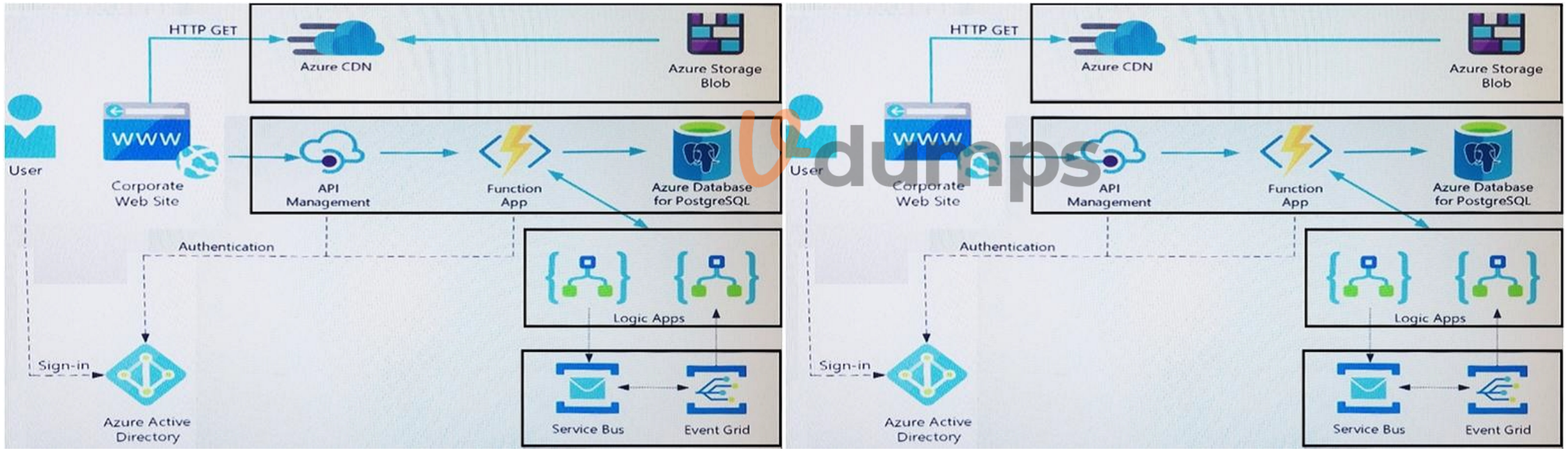
The company has a public website located at http://www.cpandl.com/. The site is a single-page web application that runs in Azure App Service on Linux. The website uses files stored in Azure Storage and cached in Azure Content Delivery Network (CDN) to serve static content.

API Management and Azure Function App functions are used to process and store data in Azure Database for PostgreSQL. API Management is used to broker communications to the Azure Function app functions for Logic app integration. Logic apps are used to orchestrate the data processing while Service Bus and Event Grid handle messaging and events.

The solution uses Application Insights, Azure Monitor, and Azure Key Vault.

Architecture diagram

The company has several applications and services that support their business. The company plans to implement serverless computing where possible. The overall architecture is shown below.



User authentication

The following steps detail the user authentication process:

1. The user selects Sign in in the website.

2. The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.

3. The user signs in.

4. Azure AD redirects the user's session back to the web application. The URL includes an access token. 5. The web application calls an API and includes the access token in the authentication header. The application ID is sent as the audience ('aud') claim in the access token. 6. The back-end API validates the access token.

Requirements

Corporate website

Communications and content must be secured by using SSL.

Communications must use HTTPS.

Data must be replicated to a secondary region and three availability zones.

Data storage costs must be minimized.

Azure Database for PostgreSQL

The database connection string is stored in Azure Key Vault with the following attributes:

Azure Key Vault name: cpandlkeyvault

Secret name: PostgreSQLConn

Id: 80df3e46ffcd4f1cb187f79905e9a1e8

The connection information is updated frequently. The application must always use the latest information to connect to the database.

Azure Service Bus and Azure Event Grid

Azure Event Grid must use Azure Service Bus for queue-based load leveling.

Events in Azure Event Grid must be routed directly to Service Bus queues for use in buffering.

Events from Azure Service Bus and other Azure services must continue to be routed to Azure Event Grid for processing.

Security

All SSL certificates and credentials must be stored in Azure Key Vault.

File access must restrict access by IP, protocol, and Azure AD rights.

All user accounts and processes must receive only those privileges which are essential to perform their intended function.

Compliance

Auditing of the file updates and transfers must be enabled to comply with General Data Protection Regulation (GDPR). The file updates must be read-only, stored in the order in which they occurred, include only create, update, delete, and copy operations, and be retained for compliance reasons.

Issues

Corporate website

While testing the site, the following error message displays:

CryptographicException: The system cannot find the file specified.

Function app

You perform local testing for the RequestUserApproval function. The following error message displays:

'Timeout value of 00:10:00 exceeded by function: RequestUserApproval'

The same error message displays when you test the function in an Azure development environment when you run the following Kusto query:

FunctionAppLogs

| where FunctionName = = "RequestUserApproval"

Logic app

You test the Logic app in a development environment. The following error message displays:

'400 Bad Request'

Troubleshooting of the error shows an HttpTrigger action to call the RequestUserApproval function.

Code

Corporate website

Security.cs:

```
SC01 public class Security
SC02 {
SC03 var bytes = System.IO.File.ReadAllBytes("~/var/ssl/private");
SC04 var cert = new System.Security.Cryptography.X509Certificate2(bytes);
SC05 var certName = cert.FriendlyName;
SC06 }
```

```
SC01 public class Security
SC02 {
SC03 var bytes = System.IO.File.ReadAllBytes("~/var/ssl/private");
SC04 var cert = new System.Security.Cryptography.X509Certificate2(bytes);
SC05 var certName = cert.FriendlyName;
SC06 }
```

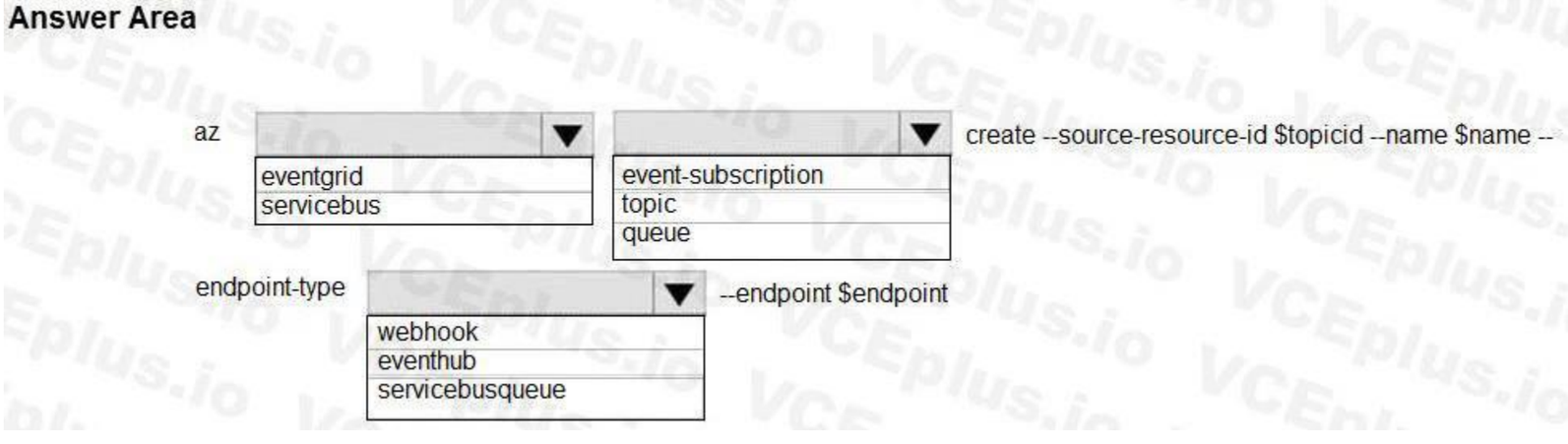
Function app

RequestUserApproval.cs:

```
RA01 public static class RequestUserApproval
RA02 {
RA03 [FunctionName("RequestUserApproval")]
RA04 public static async Task<IActionResult> Run(
RA05 [HttpTrigger(AuthorizationLevel.Function, "get", "post", Route = null)] HttpRequest req.
ILogger log)
RA06 {
RA07   log.LogInformation("RequestUserApproval function processed a request.");
RA08 ...
RA09 return ProcessRequest(req)
RA10   ? (ActionResult)new OkObjectResult($"User approval processed")
RA11   : new BadRequestObjectResult("Failed to process user approval");
RA12 }
RA13 private static bool ProcessRequest(HttpRequest req)
RA14 {
RA15   ...
RA16 }
RA17}
```

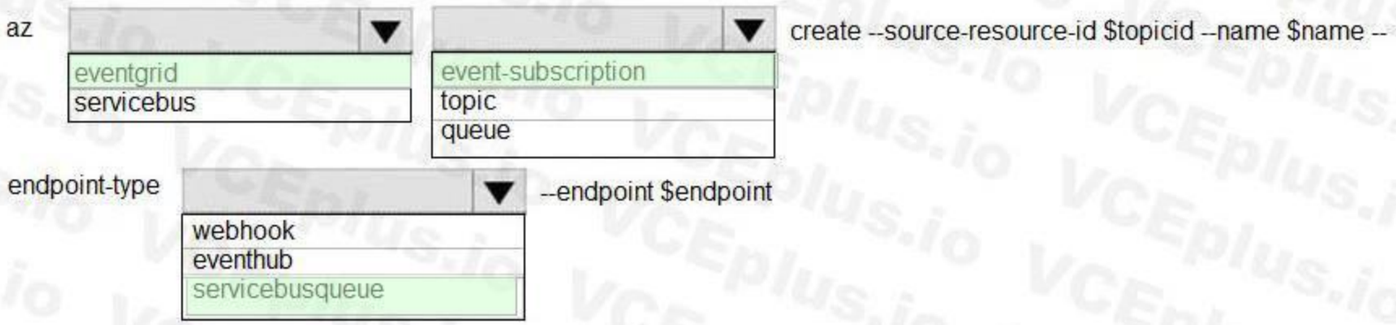

QUESTION 1
HOTSPOT
You need to configure the integration for Azure Service Bus and Azure Event Grid.
How should you complete the CLI statement? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:

Answer Area



Section:
Explanation:
Box 1: eventgrid
To create event subscription use: az eventgrid event-subscription create
Box 2: event-subscription
Box 3: servicebusqueue
Scenario: Azure Service Bus and Azure Event Grid
Azure Event Grid must use Azure Service Bus for queue-based load leveling.
Events in Azure Event Grid must be routed directly to Service Bus queues for use in buffering.
Events from Azure Service Bus and other Azure services must continue to be routed to Azure Event Grid for processing.
Reference:
https://docs.microsoft.com/en-us/cli/azure/eventgrid/event-subscription?view=azure-cli-latest#az_eventgrid_event_subscription_create

QUESTION 2
You need to ensure that all messages from Azure Event Grid are processed.
What should you use?

A. Azure Event Grid topic
B. Azure Service Bus topic
C. Azure Service Bus queue
D. Azure Storage queue
E. Azure Logic App custom connector

Correct Answer: C
Section:
Explanation:
As a solution architect/developer, you should consider using Service Bus queues when:
Your solution needs to receive messages without having to poll the queue. With Service Bus, you can achieve it by using a long-polling receive operation using the TCP-based protocols that Service Bus supports.
Reference:
https://docs.microsoft.com/en-us/azure/service-bus-messaging/service-bus-azure-and-service-bus-queues-compared-contrasted

03 - Connect to and consume Azure services and third-party services

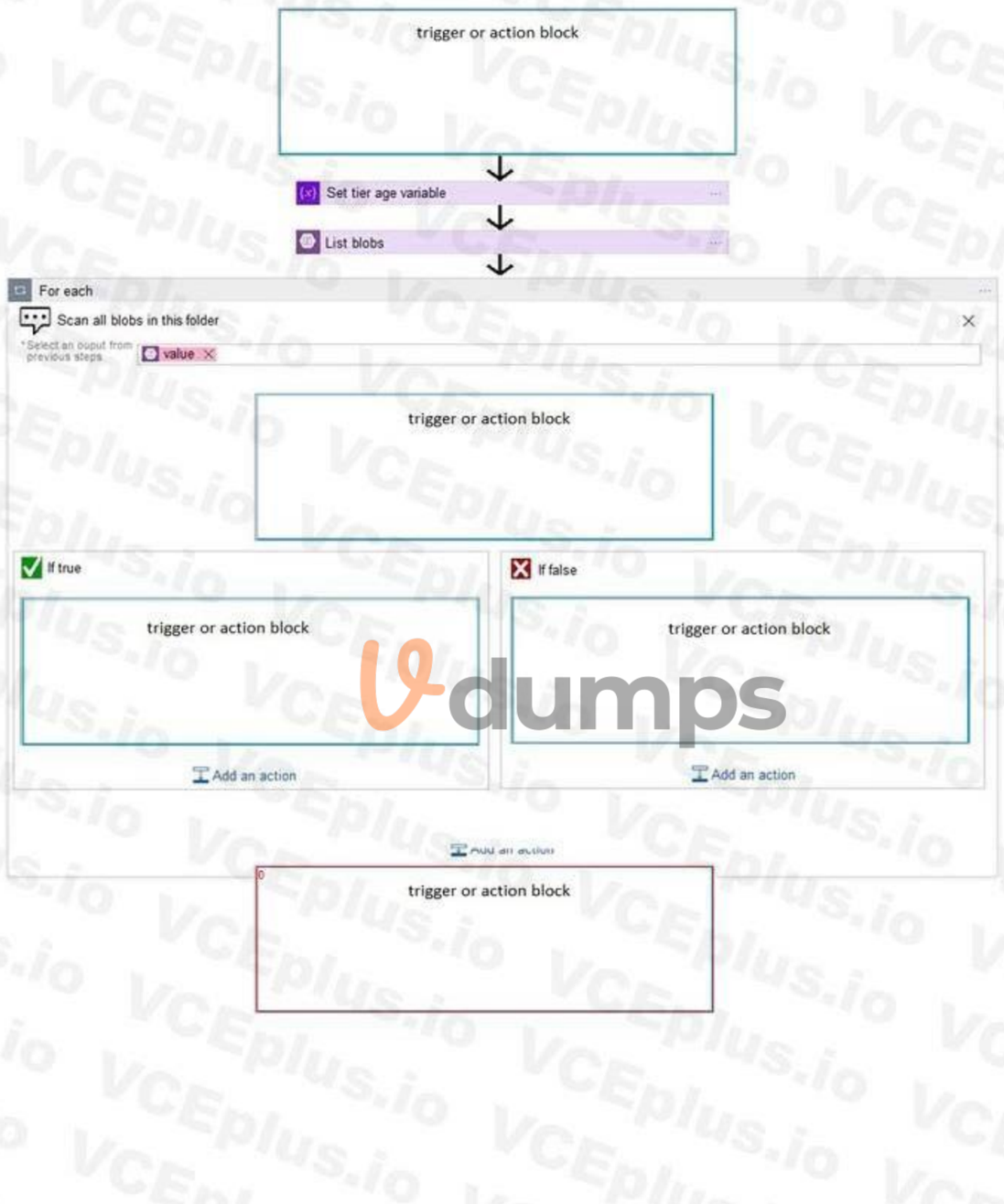
QUESTION 1
DRAG DROP

A company backs up all manufacturing data to Azure Blob Storage. Admins move blobs from hot storage to archive tier storage every month.
You must automatically move blobs to Archive tier after they have not been modified within 180 days. The path for any item that is not archived must be placed in an existing queue. This operation must be performed automatically once a month. You set the value of TierAgeInDays to -180.
How should you configure the Logic App? To answer, drag the appropriate triggers or action blocks to the correct trigger or action slots. Each trigger or action block 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.
NOTE: Each correct selection is worth one point.

Select and Place:

Triggers and action blocks

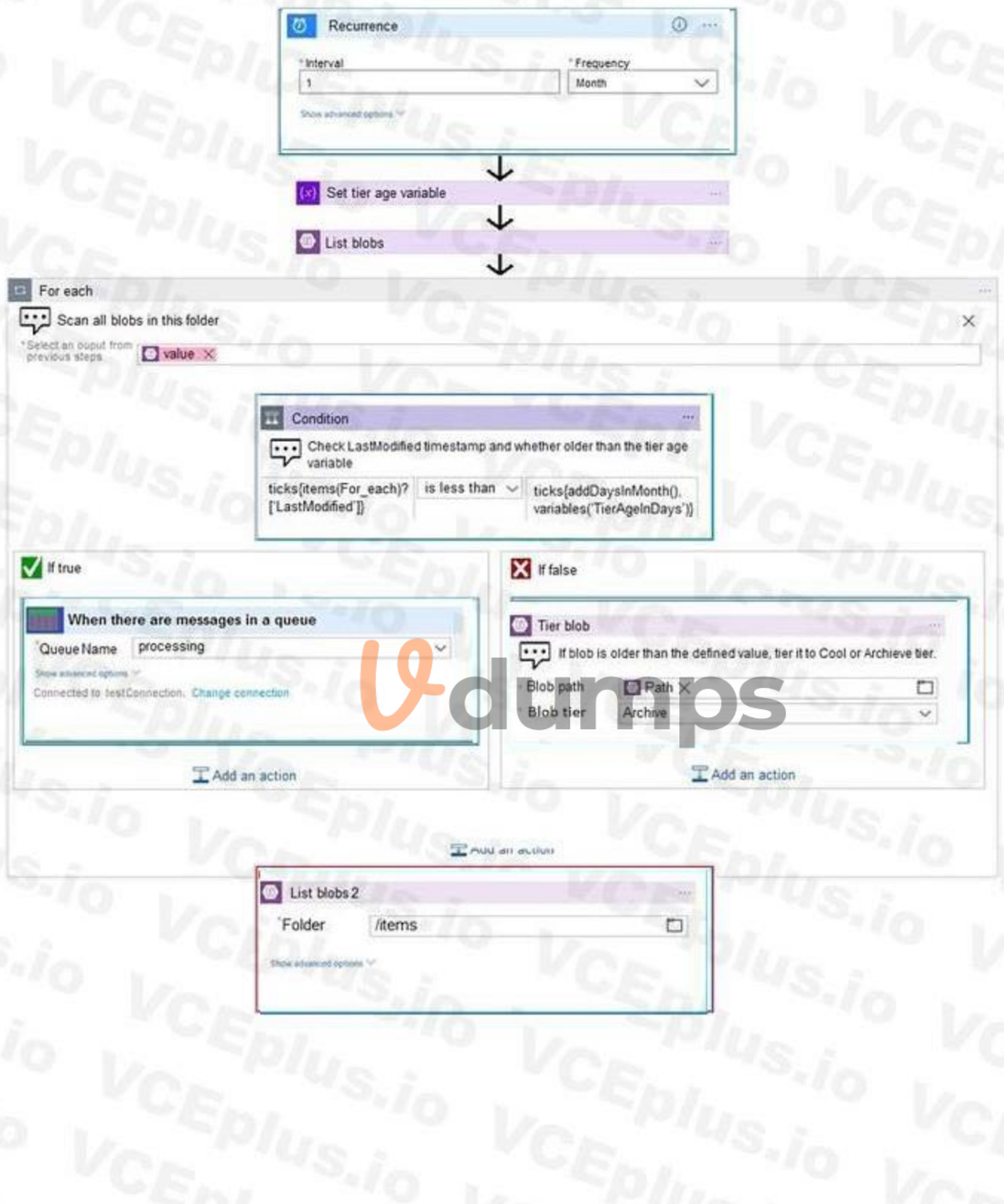
Answer area



Correct Answer:

Triggers and action blocks

Answer area



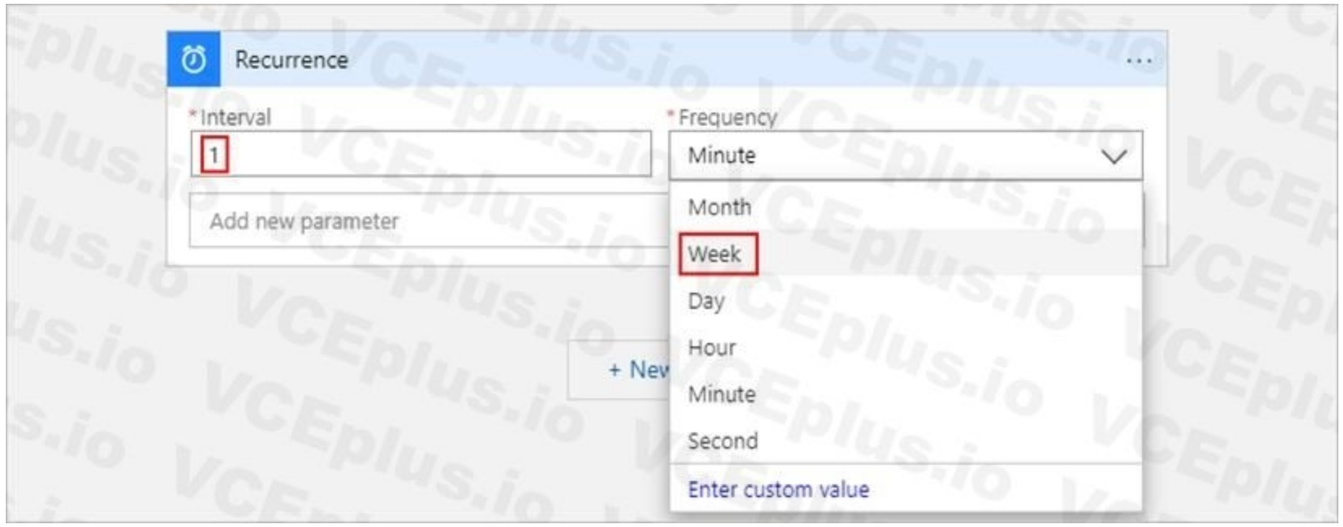
Section:

Explanation:

Box 1: Reoccurance..

To regularly run tasks, processes, or jobs on specific schedule, you can start your logic app workflow with the built-in Recurrence - Schedule trigger. You can set a date and time as well as a time zone for starting the workflow and a recurrence for repeating that workflow.

Set the interval and frequency for the recurrence. In this example, set these properties to run your workflow every week.



Box 2: Condition..
To run specific actions in your logic app only after passing a specified condition, add a conditional statement. This control structure compares the data in your workflow against specific values or fields. You can then specify different actions that run based on whether or not the data meets the condition.
Box 3: Put a message on a queue
The path for any item that is not archived must be placed in an existing queue.
Note: Under If true and If false, add the steps to perform based on whether the condition is met.
Box 4: ..tier it to Cool or Archive tier.
Archive item.
Box 5: List blobs 2
Reference:
https://docs.microsoft.com/en-us/azure/connectors/connectors-native-recurrence
https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-control-flow-loops
https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-control-flow-conditional-statement

QUESTION 2
A company is developing a solution that allows smart refrigerators to send temperature information to a central location. You have an existing Service Bus.
The solution must receive and store messages until they can be processed. You create an Azure Service Bus instance by providing a name, pricing tier, subscription, resource group, and location.
You need to complete the configuration.
Which Azure CLI or PowerShell command should you run?

A.
```
az group create
  --name fridge-rg
  --location fridge-loc
```
B.
```
New-AzureRmServiceBusNamespace
  -ResourceGroupName fridge-rg
  -NamespaceName fridge-ns
  -Location fridge-loc
```
C.

```
New-AzureRmServiceBusQueue
  -ResourceGroupName fridge-rg
  -NamespaceName fridge-ns
  -Name fridge-q
  -EnablePartitioning $False
```

D.

```
Get-AzureRmServiceBusKey
  -ResourceGroupName fridge-rg
  -Namespace fridge-ns
  -Name RootManageSharedAccessKey
```

Correct Answer: C
Section:
Explanation:
A service bus instance has already been created (Step 2 below). Next is step 3, Create a Service Bus queue.
Note:
Steps:
Step 1: # Create a resource group
resourceGroupName="myResourceGroup"
az group create --name $resourceGroupName --location eastus
Step 2: # Create a Service Bus messaging namespace with a unique name
namespaceName=myNameSpace$RANDOM
az servicebus namespace create --resource-group $resourceGroupName --name $namespaceName --location eastus
Step 3: # Create a Service Bus queue
az servicebus queue create --resource-group $resourceGroupName --namespace-name $namespaceName --name BasicQueue
Step 4: # Get the connection string for the namespace
connectionString=$(az servicebus namespace authorization-rule keys list --resource-group $resourceGroupName --namespace-name $namespaceName --name RootManageSharedAccessKey --query primaryConnectionString --output tsv)
Reference:
https://docs.microsoft.com/en-us/azure/service-bus-messaging/service-bus-quickstart-cli

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 section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.
You are developing an Azure Service application that processes queue data when it receives a message from a mobile application. Messages may not be sent to the service consistently.
You have the following requirements:
Queue size must not grow larger than 80 gigabytes (GB).
Use first-in-first-out (FIFO) ordering of messages.
Minimize Azure costs.
You need to implement the messaging solution.
Solution: Use the .Net API to add a message to an Azure Storage Queue from the mobile application. Create an Azure Function App that uses an Azure Storage Queue trigger.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section:

Explanation:
Create an Azure Function App that uses an Azure Service Bus Queue trigger.
Reference:
https://docs.microsoft.com/en-us/azure/azure-functions/functions-create-storage-queue-triggered-function

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.
You are developing an Azure solution to collect point-of-sale (POS) device data from 2,000 stores located throughout the world. A single device can produce 2 megabytes (MB) of data every 24 hours. Each store location has one to five devices that send data.
You must store the device data in Azure Blob storage. Device data must be correlated based on a device identifier. Additional stores are expected to open in the future.
You need to implement a solution to receive the device data.
Solution: Provision an Azure Service Bus. Configure a topic to receive the device data by using a correlation filter.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: A
Section:
Explanation:
A message is raw data produced by a service to be consumed or stored elsewhere. The Service Bus is for high-value enterprise messaging, and is used for order processing and financial transactions.
Reference: https://docs.microsoft.com/en-us/azure/event-grid/compare-messaging-services

QUESTION 5
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.
You are developing an Azure solution to collect point-of-sale (POS) device data from 2,000 stores located throughout the world. A single device can produce 2 megabytes (MB) of data every 24 hours. Each store location has one to five devices that send data.
You must store the device data in Azure Blob storage. Device data must be correlated based on a device identifier. Additional stores are expected to open in the future.
You need to implement a solution to receive the device data.
Solution: Provision an Azure Event Grid. Configure event filtering to evaluate the device identifier.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section:
Explanation:
Instead use an Azure Service Bus, which is used order processing and financial transactions.
Note: An event is a lightweight notification of a condition or a state change. Event hubs is usually used reacting to status changes.
Reference: https://docs.microsoft.com/en-us/azure/event-grid/compare-messaging-services

QUESTION 6
A company is developing a solution that allows smart refrigerators to send temperature information to a central location. You have an existing Service Bus.
The solution must receive and store messages until they can be processed. You create an Azure Service Bus instance by providing a name, pricing tier, subscription, resource group, and location.

You need to complete the configuration.
Which Azure CLI or PowerShell command should you run?

A.
```
az servicebus queue create
--resource-group fridge-rg
--namespace-name fridge-ns
--name fridge-q
```
B.
```
New-AzureRmResourceGroup
-Name fridge-rg
-Location fridge-loc
```
C.
```
az servicebus namespace create
  --resource-group fridge-rg
  --name fridge-ns
  --location fridge-loc
```
D.
```
connectionString-$)az serviceBus namespace authorization-rule keys list
--resource-group fridge-rg
--fridge-ns fridge-ns
--query primaryConnectionString -output tsv)
```

Correct Answer: A
Section:
Explanation:
A service bus instance has already been created (Step 2 below). Next is step 3, Create a Service Bus queue.
Note:
Steps:
Step 1: # Create a resource group
resourceGroupName="myResourceGroup"
az group create --name $resourceGroupName --location eastus
Step 2: # Create a Service Bus messaging namespace with a unique name
namespaceName=myNameSpace$RANDOM
az servicebus namespace create --resource-group $resourceGroupName --name $namespaceName --location eastus
Step 3: # Create a Service Bus queue
az servicebus queue create --resource-group $resourceGroupName --namespace-name $namespaceName --name BasicQueue
Step 4: # Get the connection string for the namespace
connectionString=$(az servicebus namespace authorization-rule keys list --resource-group $resourceGroupName --namespace-name $namespaceName --name RootManageSharedAccessKey --query primaryConnectionString --output tsv)
Reference:
https://docs.microsoft.com/en-us/azure/service-bus-messaging/service-bus-quickstart-cli

QUESTION 7
You are developing a solution that will use Azure messaging services.
You need to ensure that the solution uses a publish-subscribe model and eliminates the need for constant polling.
What are two possible ways to achieve the goal? Each correct answer presents a complete solution.
NOTE: Each correct selection is worth one point.

A. Service Bus
B. Event Hub
C. Event Grid
D. Queue

Correct Answer: A, C
Section:
Explanation:
It is strongly recommended to use available messaging products and services that support a publish-subscribe model, rather than building your own. In Azure, consider using Service Bus or Event Grid. Other technologies that can be used for pub/sub messaging include Redis, RabbitMQ, and Apache Kafka.
Reference:
https://docs.microsoft.com/en-us/azure/architecture/patterns/publisher-subscriber

QUESTION 8
Case study
This is a case study. Case studies are not timed separately. You can use as much exam time as you would like to complete each case. However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.
To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other questions in this case study.
At the end of this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.
To start the case study
To display the first question in this case study, click the Next button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. When you are ready to answer a question, click the Question button to return to the question.
Background
You are a developer for Proseware, Inc. You are developing an application that applies a set of governance policies for Proseware's internal services, external services, and applications. The application will also provide a shared library for common functionality.
Requirements
Policy service
You develop and deploy a stateful ASP.NET Core 2.1 web application named Policy service to an Azure App Service Web App. The application reacts to events from Azure Event Grid and performs policy actions based on those events.
The application must include the Event Grid Event ID field in all Application Insights telemetry.
Policy service must use Application Insights to automatically scale with the number of policy actions that it is performing.
Policies
Log policy
All Azure App Service Web Apps must write logs to Azure Blob storage. All log files should be saved to a container named logdrop. Logs must remain in the container for 15 days.
Authentication events
Authentication events are used to monitor users signing in and signing out. All authentication events must be processed by Policy service. Sign outs must be processed as quickly as possible.
PolicyLib
You have a shared library named PolicyLib that contains functionality common to all ASP.NET Core web services and applications. The PolicyLib library must:
Exclude non-user actions from Application Insights telemetry.
Provide methods that allow a web service to scale itself.
Ensure that scaling actions do not disrupt application usage.
Other
Anomaly detection service
You have an anomaly detection service that analyzes log information for anomalies. It is implemented as an Azure Machine Learning model. The model is deployed as a web service. If an anomaly is detected, an Azure Function that emails administrators is called by using an HTTP WebHook.
Health monitoring
All web applications and services have health monitoring at the /health service endpoint.

Issues
Policy loss
When you deploy Policy service, policies may not be applied if they were in the process of being applied during the deployment.
Performance issue
When under heavy load, the anomaly detection service undergoes slowdowns and rejects connections.
Notification latency
Users report that anomaly detection emails can sometimes arrive several minutes after an anomaly is detected.
App code
EventGridController.cs
Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

EventGridController.cs

```
EG01 public class EventGridController : Controller
EG02 {
EG03   public static AsyncLocal<string> EventId = new AsyncLocal<string>();
EG04   public IActionResult Process([fromBody] string eventsJson)
EG05   {
EG06     var events = JArray.Parse(eventsJson);
EG07
EG08     foreach (var @event in events)
EG09     {
EG10       EventId.Value = @event["id"].ToString();
EG11       if (@event["topic"].ToString().Contains("providers/Microsoft.Storage"))
EG12       {
EG13         SendToAnomalyDetectionService(@event["data"]["url"].ToString());
EG14       }
EG15
EG16       {
EG17         EnsureLogging(@event["subject"].ToString());
EG18       }
EG19     }
EG20     return null;
EG21   }
EG22   private void EnsureLogging(string resource)
EG23   {
EG24     . . .
EG25   }
EG26   private async Task SendToAnomalyDetectionService(string uri)
EG27   {
EG28     var content = GetLogData(uri);
EG29     var scoreRequest = new
EG30     {
EG31       Inputs = new Dictionary<string, List<Dictionary<string, string>>>()
EG32       {
EG33         {
EG34           "input1",
EG35           new List<Dictionary<string, string>>()
EG36           {
EG37             new Dictionary<string, string>()
EG38             {
EG39               {
EG40                 "logcontent", content
EG41               }
EG42             }
EG43           }
EG44         },
EG45       },
EG46       GlobalParameters = new Dictionary<string, string>() { }
EG47     };
EG48     var result = await (new HttpClient()).PostAsJsonAsync("...", scoreRequest);
EG49     var rawModelResult = await result.Content.ReadAsStringAsync();
EG50     var modelResult = JObject.Parse(rawModelResult);
EG51     if (modelResult["notify"].HasValues)
EG52     {
EG53       . . .
EG54     }
EG55   }
EG56   private (string name, string resourceGroup) ParseResourceId(string resourceId)
EG57   {
EG58     . . .
```

LoginEvent.cs
Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

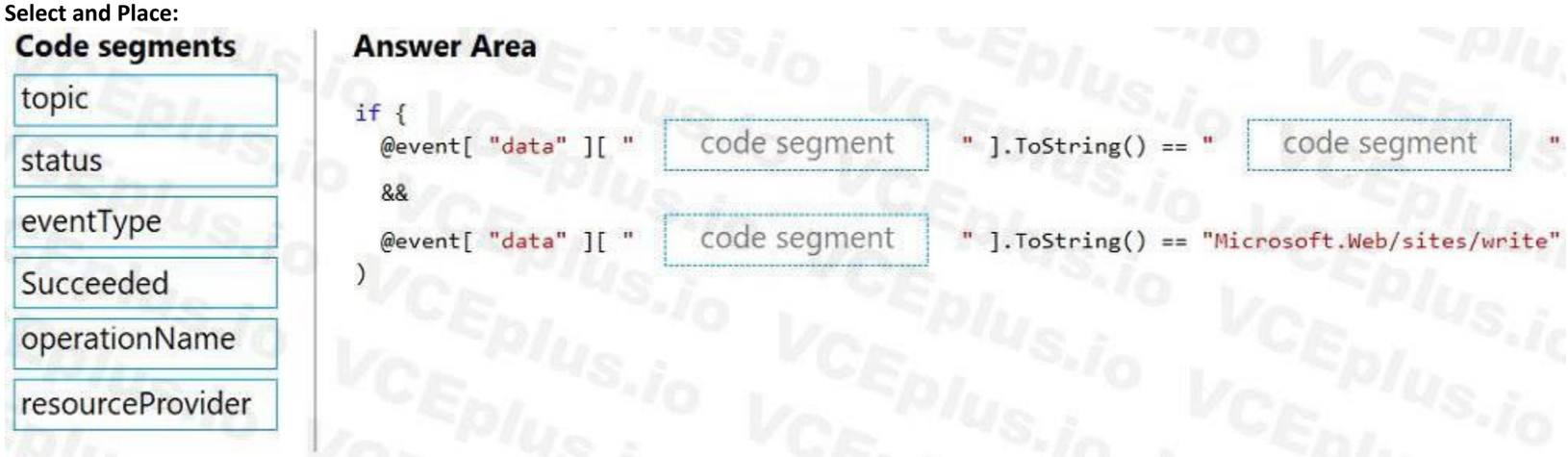
```
LoginEvent.cs
LE01 public class LoginEvent
LE02 {
LE03
LE04   public string subject { get; set; }
LE05   public DateTime eventTime { get; set; }
LE06   public Dictionary<string, string> data { get; set; }
LE07   public string Serialize()
LE08   {
LE09     return JsonConvert.SerializeObject(this);
LE10   }
LE11 }
```

A.

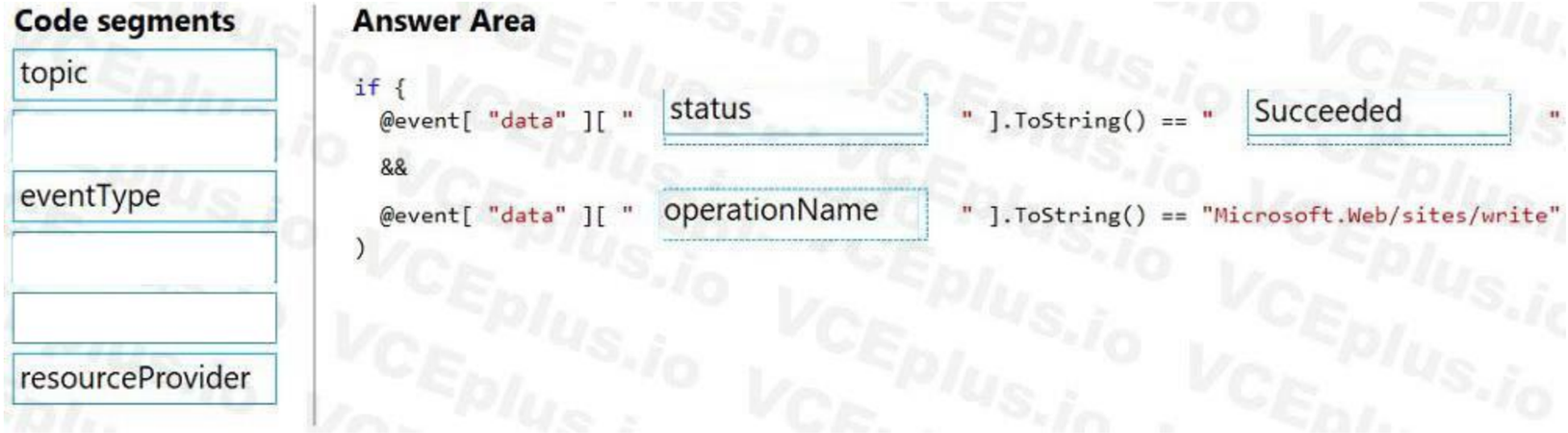
Correct Answer:
Section:

QUESTION 9
DRAG DROP
You need to add code at line EG15 in EventGridController.cs to ensure that the Log policy applies to all services.
How should you complete the code? To answer, drag the appropriate code segments to the correct locations. Each code 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.
NOTE: Each correct selection is worth one point.

Select and Place:



Correct Answer:



Section:
Explanation:
Scenario, Log policy: All Azure App Service Web Apps must write logs to Azure Blob storage.
Box 1: Status
Box 2: Succeeded
Box 3: operationName
Microsoft.Web/sites/write is resource provider operation. It creates a new Web App or updates an existing one.
Reference:
https://docs.microsoft.com/en-us/azure/role-based-access-control/resource-provider-operations

QUESTION 10
HOTSPOT
You need to insert code at line LE03 of LoginEvent.cs to ensure that all authentication events are processed correctly.
How should you complete the code? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

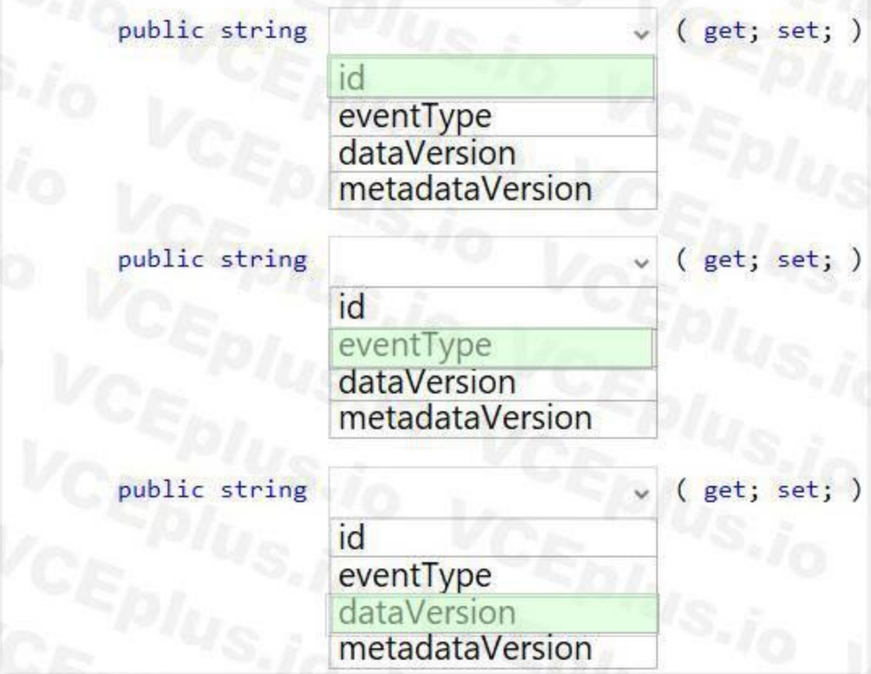
Hot Area:

Answer Area

```
public string [id / eventType / dataVersion / metadataVersion] ( get; set; )
public string [id / eventType / dataVersion / metadataVersion] ( get; set; )
public string [id / eventType / dataVersion / metadataVersion] ( get; set; )
```

Answer Area:

Answer Area



Section:

Explanation:

Box 1: id

id is a unique identifier for the event.

Box 2: eventType

eventType is one of the registered event types for this event source.

Box 3: dataVersion

dataVersion is the schema version of the data object. The publisher defines the schema version.

Scenario: Authentication events are used to monitor users signing in and signing out. All authentication events must be processed by Policy service. Sign outs must be processed as quickly as possible.

The following example shows the properties that are used by all event publishers:

```
[
{
"topic": string,
"subject": string,
"id": string,
"eventType": string,
"eventTime": string,
"data":{
object-unique-to-each-publisher
},
"dataVersion": string,
"metadataVersion": string
```

}
]
Reference:
https://docs.microsoft.com/en-us/azure/event-grid/event-schema

QUESTION 11
HOTSPOT
You need to implement the Log policy.
How should you complete the EnsureLogging method in EventGridController.cs? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area:

Answer Area

```
var client = new WebSiteManagementClient(. . .);
var id = ParseResourceID(resource);
var appSettings = new StringDictionary(name: "properties",
  properties: new Dictionary<string, string> {
  {"DIAGNOSTICS_AZUREBLOBCONTAINERSASURL", BlobStoreAccountSAS(" ")},

  {"DIAGNOSTICS_AZUREBLOBRETENTIONINDAYS", " "}

});
client.WebApps. (
  id.resourceGroup,
  id.name, appSettings);
```

logs
logdrop

15
30

UploadLoggingSettings
UpdateApplicationSetting

Section:
Explanation:
Box 1: logdrop
All log files should be saved to a container named logdrop.
Box 2: 15
Logs must remain in the container for 15 days.
Box 3: UpdateApplicationSettings
All Azure App Service Web Apps must write logs to Azure Blob storage.
Reference:
https://blog.hompus.nl/2017/05/29/adding-application-logging-blob-to-a-azure-web-app-service-using-powershell/

QUESTION 12
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.
You are developing an Azure Service application that processes queue data when it receives a message from a mobile application. Messages may not be sent to the service consistently.
You have the following requirements:
Queue size must not grow larger than 80 gigabytes (GB).
Use first-in-first-out (FIFO) ordering of messages.
Minimize Azure costs.
You need to implement the messaging solution.
Solution: Use the .Net API to add a message to an Azure Service Bus Queue from the mobile application. Create an Azure Function App that uses an Azure Service Bus Queue trigger.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: A
Section:
Explanation:
You can create a function that is triggered when messages are submitted to an Azure Storage queue.
Reference: https://docs.microsoft.com/en-us/azure/azure-functions/functions-create-storage-queue-triggered-function

QUESTION 13
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.
You are developing an Azure solution to collect point-of-sale (POS) device data from 2,000 stores located throughout the world. A single device can produce 2 megabytes (MB) of data every 24 hours. Each store location has one to five devices that send data.
You must store the device data in Azure Blob storage. Device data must be correlated based on a device identifier. Additional stores are expected to open in the future.
You need to implement a solution to receive the device data.
Solution: Provision an Azure Notification Hub. Register all devices with the hub.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section:
Explanation:
Instead use an Azure Service Bus, which is used order processing and financial transactions.
Reference: https://docs.microsoft.com/en-us/azure/event-grid/compare-messaging-services

QUESTION 14
A company is implementing a publish-subscribe (Pub/Sub) messaging component by using Azure Service Bus. You are developing the first subscription application.
In the Azure portal you see that messages are being sent to the subscription for each topic. You create and initialize a subscription client object by supplying the correct details, but the subscription application is still not consuming the messages.
You need to ensure that the subscription client processes all messages.
Which code segment should you use?

A. await subscriptionClient.AddRuleAsync(new RuleDescription(RuleDescription.DefaultRuleName, new TrueFilter()));
B. subscriptionClient = new SubscriptionClient(ServiceBusConnectionString, TopicName, SubscriptionName);
C. await subscriptionClient.CloseAsync();
D. subscriptionClient.RegisterMessageHandler(ProcessMessagesAsync, messageHandlerOptions);

Correct Answer: D
Section:
Explanation:
Using topic client, call RegisterMessageHandler which is used to receive messages continuously from the entity. It registers a message handler and begins a new thread to receive messages. This handler is waited on every time a new message is received by the receiver.
subscriptionClient.RegisterMessageHandler(ReceiveMessagesAsync, messageHandlerOptions);

Reference:
https://www.c-sharpcorner.com/article/azure-service-bus-topic-and-subscription-pub-sub/

QUESTION 15
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.
You are developing an Azure Service application that processes queue data when it receives a message from a mobile application. Messages may not be sent to the service consistently.
You have the following requirements:
Queue size must not grow larger than 80 gigabytes (GB).
Use first-in-first-out (FIFO) ordering of messages.
Minimize Azure costs.
You need to implement the messaging solution.
Solution: Use the .Net API to add a message to an Azure Storage Queue from the mobile application. Create an Azure VM that is triggered from Azure Storage Queue events.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section:
Explanation:
Don't use a VM, instead create an Azure Function App that uses an Azure Service Bus Queue trigger.
Reference:
https://docs.microsoft.com/en-us/azure/azure-functions/functions-create-storage-queue-triggered-function

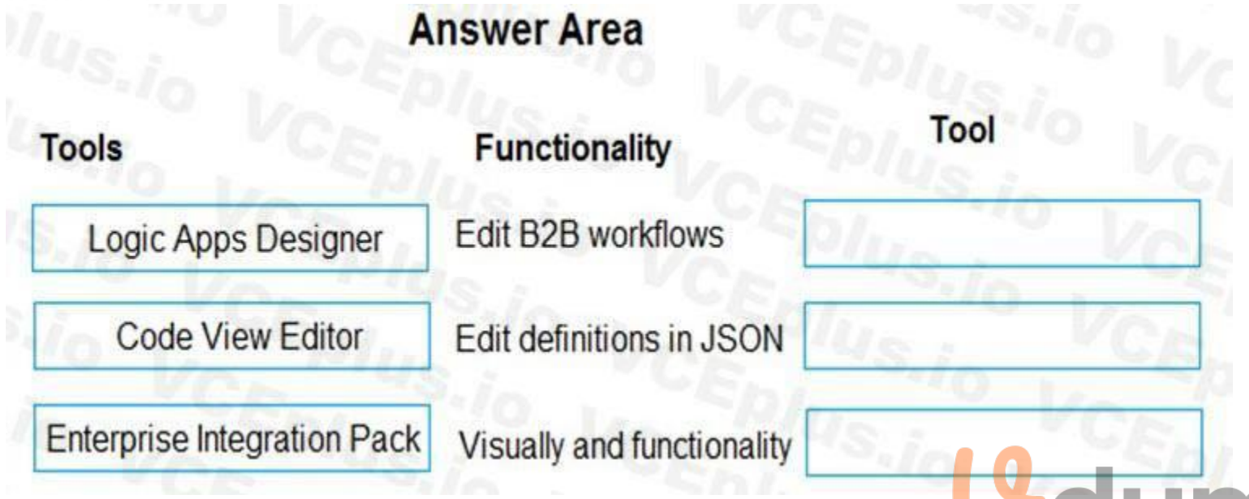
QUESTION 16
Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.
After 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.
You are developing an Azure Service application that processes queue data when it receives a message from a mobile application. Messages may not be sent to the service consistently.
You have the following requirements:
Queue size must not grow larger than 80 gigabytes (GB).
Use first-in-first-out (FIFO) ordering of messages.
Minimize Azure costs.
You need to implement the messaging solution.
Solution: Use the .Net API to add a message to an Azure Service Bus Queue from the mobile application. Create an Azure Windows VM that is triggered from Azure Service Bus Queue.
Does the solution meet the goal?

A. Yes
B. No

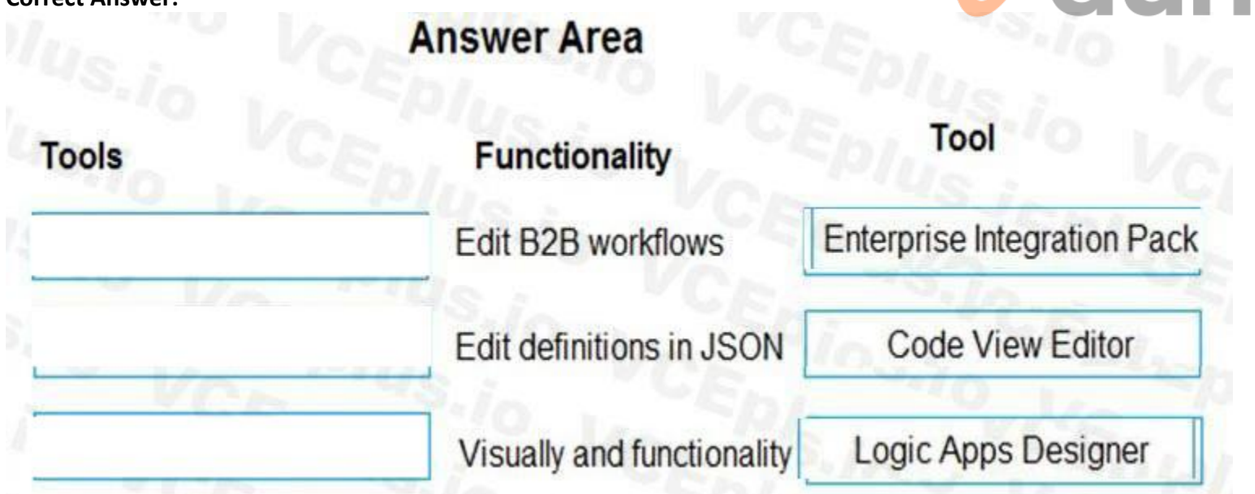
Correct Answer: B
Section:
Explanation:
Don't use a VM, instead create an Azure Function App that uses an Azure Service Bus Queue trigger.
Reference:
https://docs.microsoft.com/en-us/azure/azure-functions/functions-create-storage-queue-triggered-function

QUESTION 17
DRAG DROP
You manage several existing Logic Apps.
You need to change definitions, add new logic, and optimize these apps on a regular basis.
What should you use? To answer, drag the appropriate tools to the correct functionalities. Each tool 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.
NOTE: Each correct selection is worth one point.

Select and Place:



Correct Answer:



Section:
Explanation:
Box 1: Enterprise Integration Pack For business-to-business (B2B) solutions and seamless communication between organizations, you can build automated scalable enterprise integration workflows by using the Enterprise Integration Pack (EIP) with Azure Logic Apps.
Box 2: Code View Editor
Edit JSON - Azure portal
1. Sign in to the Azure portal.
2. From the left menu, choose All services. In the search box, find "logic apps", and then from the results, select your logic app.

3. On your logic app's menu, under Development Tools, select Logic App Code View.
4. The Code View editor opens and shows your logic app definition in JSON format.
Box 3: Logic Apps Designer
Reference:
https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-enterprise-integration-overview
https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-author-definitions

QUESTION 18
HOTSPOT
You are developing an application that uses Azure Storage Queues.
You have the following code:

```
CloudStorageAccount storageAccount = CloudStorageAccount.Parse
(CloudConfigurationManager.GetSetting("StorageConnectionString"));
CloudQueueClient queueClient = storageAccount.CreateCloudQueueClient();

CloudQueue queue = queueClient.GetQueueReference("appqueue");
await queue.CreateIfNotExistsAsync();

CloudQueueMessage peekedMessage = await queue.PeekMessageAsync();
if (peekedMessage != null)
{
    Console.WriteLine("The peeked message is: {0}", peekedMessage.AsString);
}
CloudQueueMessage message = await queue.GetMessageAsync() ;
```

For each of the following statements, select Yes if the statement is true. Otherwise, select No.
NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

Statement	Yes	No
The code configures the lock duration for the queue.	○	○
The last message read remains in the queue after the code runs.	○	○
The storage queue remains in the storage account after the code runs.	○	○

Answer Area:

Answer Area

Statement	Yes	No
The code configures the lock duration for the queue.	○	○
The last message read remains in the queue after the code runs.	○	○
The storage queue remains in the storage account after the code runs.	○	○

Section:
Explanation:
Box 1: No The QueueDescription.LockDuration property gets or sets the duration of a peek lock; that is, the amount of time that the message is locked for other receivers. The maximum value for LockDuration is 5 minutes; the default value is 1 minute.
Box 2: Yes
You can peek at the message in the front of a queue without removing it from the queue by calling the PeekMessage method.
Box 3: Yes
Reference:
https://docs.microsoft.com/en-us/azure/storage/queues/storage-dotnet-how-to-use-queues
https://docs.microsoft.com/en-us/dotnet/api/microsoft.servicebus.messaging.queuedescription.lockduration

QUESTION 19
HOTSPOT
You are working for Contoso, Ltd.
You define an API Policy object by using the following XML markup:

```
<set-variable name= "bodySize" value="@(context.Request.Headers["Content-Length"] [0])"/>
<choose>
 <when condition= "@(int.Parse(context.Variables.GetValueOrDefault<string> ("bodySize"))<512000)">
</when>
<otherwise>
    <rewrite-uri template= "/put"/>
    <set-backend-service base-url= "http://contoso.com/api/9.1/"/>
</otherwise>
</choose>
```

For each of the following statements, select Yes if the statement is true. Otherwise, select No.
NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

Statement	Yes	No
The XML segment belongs in the <inbound> section of the policy.	○	○
If the body size is >256k, an error will occur.	○	○
If the request is http://contoso.com/api/9.2/, the policy will retain the higher version.	○	○

Answer Area:

Answer Area

Statement	Yes	No
The XML segment belongs in the <inbound> section of the policy.	○	○
If the body size is >256k, an error will occur.	○	○
If the request is http://contoso.com/api/9.2/, the policy will retain the higher version.	○	○

Section:

Explanation:

Box 1: Yes

Use the set-backend-service policy to redirect an incoming request to a different backend than the one specified in the API settings for that operation. Syntax: <set-backend-service base-url="base URL of the backend service" />

Box 2: No

The condition is on 512k, not on 256k.

Box 3: No

The set-backend-service policy changes the backend service base URL of the incoming request to the one specified in the policy.

Reference:

https://docs.microsoft.com/en-us/azure/api-management/api-management-transformation-policies

QUESTION 20

DRAG DROP

You have an application that provides weather forecasting data to external partners. You use Azure API Management to publish APIs.

You must change the behavior of the API to meet the following requirements:

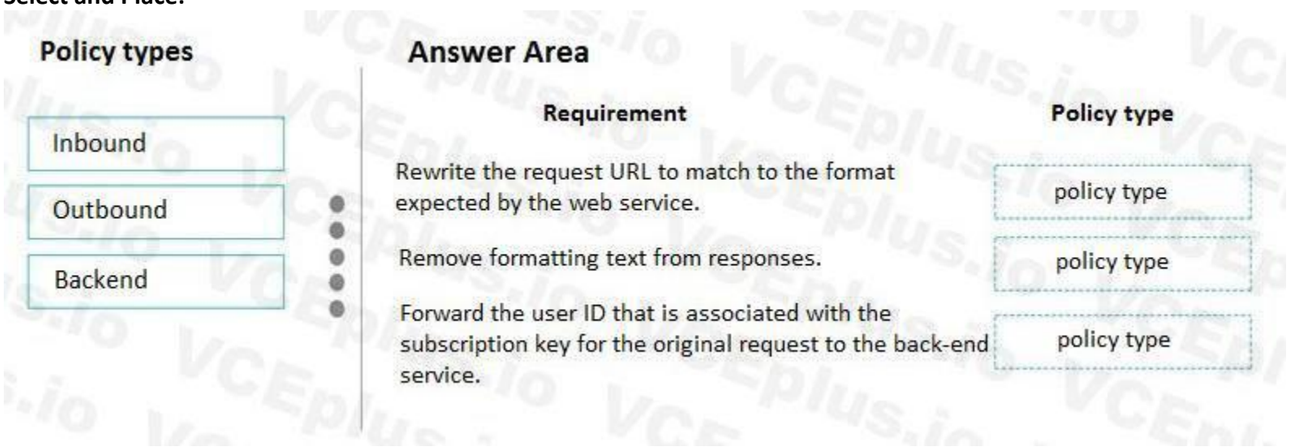
Support alternative input parameters

Remove formatting text from responses

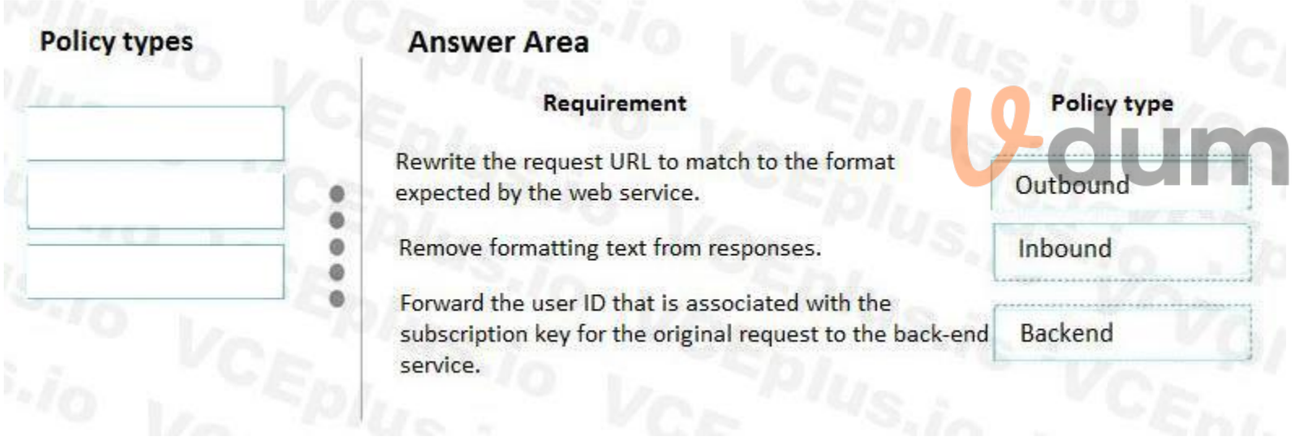
Provide additional context to back-end services

Which types of policies should you implement? To answer, drag the policy types to the correct scenarios. Each policy type 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.
NOTE: Each correct selection is worth one point.

Select and Place:



Correct Answer:



Section:
Explanation:

QUESTION 21
You are developing an e-commerce solution that uses a microservice architecture.
You need to design a communication backplane for communicating transactional messages between various parts of the solution. Messages must be communicated in first-in-first-out (FIFO) order.
What should you use?

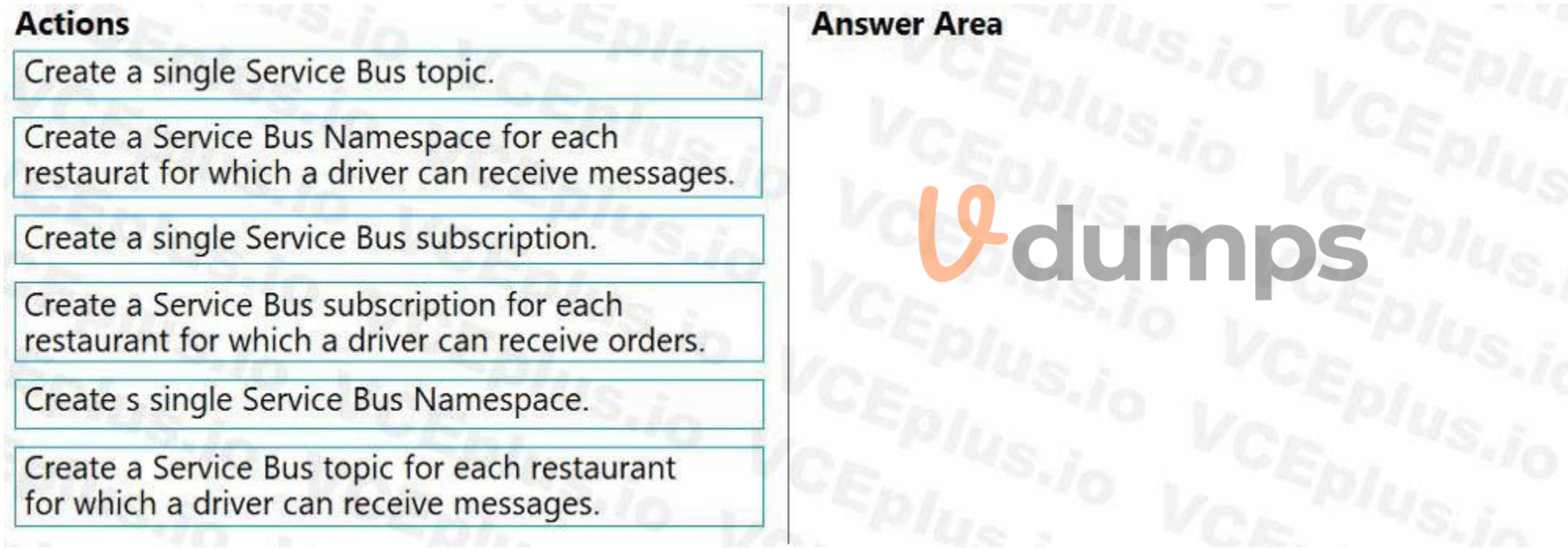
A. Azure Storage Queue
B. Azure Event Hub
C. Azure Service Bus
D. Azure Event Grid

Correct Answer: A
Section:

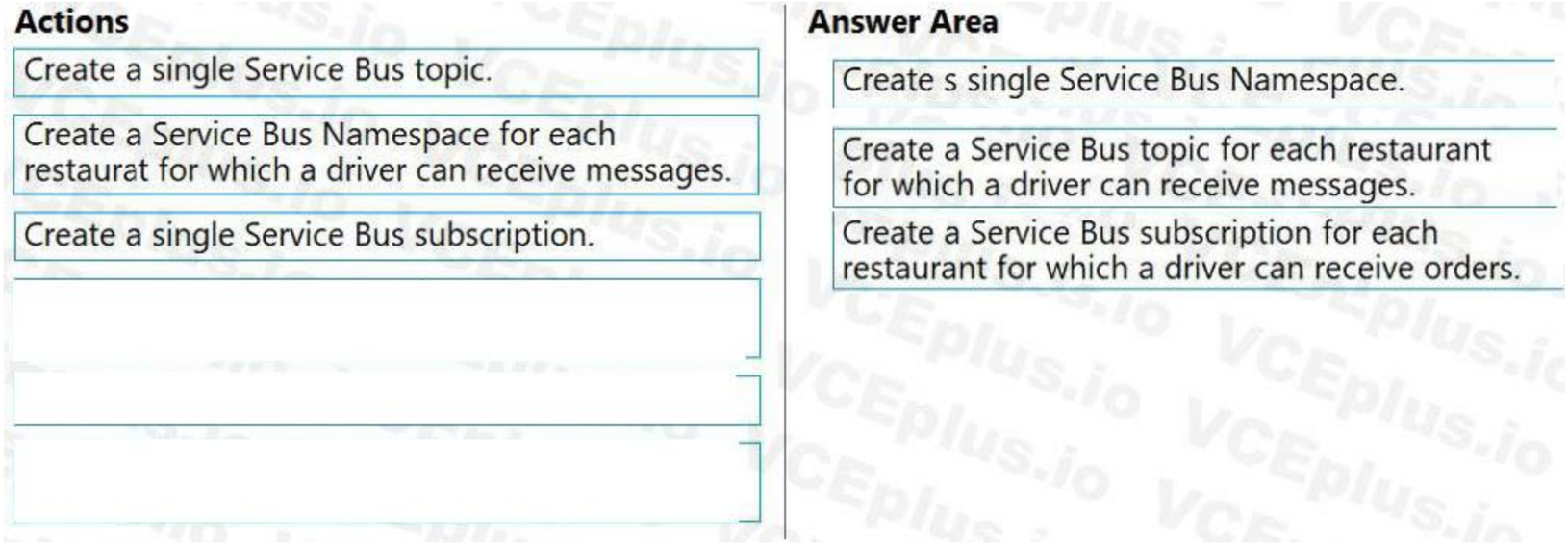
Explanation:
As a solution architect/developer, you should consider using Service Bus queues when:
Your solution requires the queue to provide a guaranteed first-in-first-out (FIFO) ordered delivery.
Reference:
https://docs.microsoft.com/en-us/azure/service-bus-messaging/service-bus-azure-and-service-bus-queues-compared-contrasted

QUESTION 22
DRAG DROP
You develop software solutions for a mobile delivery service. You are developing a mobile app that users can use to order from a restaurant in their area. The app uses the following workflow:
1. A driver selects the restaurants from which they will deliver orders.
2. Orders are sent to all available drivers in an area.
3. Only orders for the selected restaurants will appear for the driver.
4. The first driver to accept an order removes it from the list of available orders.
You need to implement an Azure Service Bus solution.
Which three actions should you perform in sequence? To answer, 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:



Section:

Explanation:

Box 1: Create a single Service Bus Namespace To begin using Service Bus messaging entities in Azure, you must first create a namespace with a name that is unique across Azure. A namespace provides a scoping container for addressing Service Bus resources within your application.

Box 2: Create a Service Bus Topic for each restaurant for which a driver can receive messages.

Create topics.

Box 3: Create a Service Bus subscription for each restaurant for which a driver can receive orders.

Topics can have multiple, independent subscriptions.

Reference:

https://docs.microsoft.com/en-us/azure/service-bus-messaging/service-bus-messaging-overview

QUESTION 23

HOTSPOT

You develop a news and blog content app for Windows devices.

A notification must arrive on a user's device when there is a new article available for them to view.

You need to implement push notifications.

How should you complete the code segment? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

```
string notificationHubName = "contoso_hub";
string notificationHubConnection = "connection_string";
[ ▾ ] hub =
    NotificationHubClient
    NotificationHubClientSettings
    NotificationHubJob
    NotificationDetails
[ ▾ ] .
    NotificationHubClient
    NotificationHubClientSettings
    NotificationHubJob
    NotificationDetails
[ ▾ ]
    GetInstallation
    CreateClientFromConnectionString
    CreateOrUpdateInstallation
    PatchInstallation
 (notificationHubConnection, notificationHubName);
string windowsToastPayload =
 @"<toast><visual><binding template=""ToastText01""><text id=""1"">" +
 @"New item to view" + @"</text></binding></visual></toast>";
try
{
var result =
  await hub.[ ▾ ](windowsToastPayload);
    SendWindowsNativeNotificationAsync
    SubmitNotificationHubJobAsync
    ScheduleNotificationAsync
    SendAppleNativeNotificationAsync
  ...
}
catch (System.Exception ex)
{
 ...
}
...
```

Answer Area:

Answer Area

```
string notificationHubName = "contoso_hub";
string notificationHubConnection = "connection_string";
                                  hub =
                                                .
 (notificationHubConnection, notificationHubName);
string windowsToastPayload =
 @"<toast><visual><binding template=""ToastText01""><text id=""1"">" +
 @"New item to view" + @"</text></binding></visual></toast>";
try
{
  var result =
    await hub.                                  (windowsToastPayload);
  ...
}
catch (System.Exception ex)
{
 ...
}
...
```

- Box 1: NotificationHubClient, NotificationHubClientSettings, NotificationHubJob, NotificationDetails
- Box 2: NotificationHubClient, NotificationHubClientSettings, NotificationHubJob, NotificationDetails
- Box 3: GetInstallation, CreateClientFromConnectionString, CreateOrUpdateInstallation, PatchInstallation
- Box 4: SendWindowsNativeNotificationAsync, SubmitNotificationHubJobAsync, ScheduleNotificationAsync, SendAppleNativeNotificationAsync

Section:
Explanation:
Box 1: NotificationHubClient
Box 2: NotificationHubClient
Box 3: CreateClientFromConnectionString
// Initialize the Notification Hub

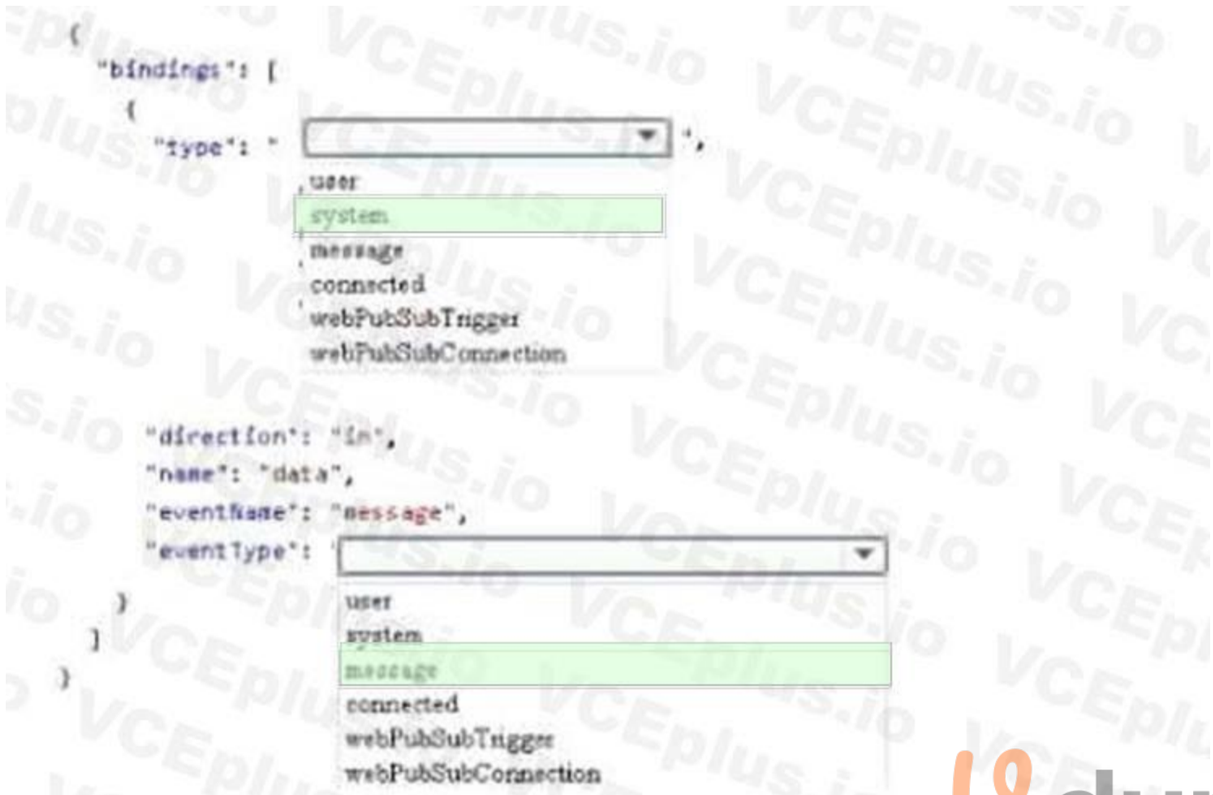
NotificationHubClient hub = NotificationHubClient.CreateClientFromConnectionString(listenConnString, hubName);
Box 4: SendWindowsNativeNotificationAsync
Send the push notification.
var result = await hub.SendWindowsNativeNotificationAsync(windowsToastPayload);
Reference:
https://docs.microsoft.com/en-us/azure/notification-hubs/notification-hubs-push-notification-registration-management
https://github.com/MicrosoftDocs/azure-docs/blob/master/articles/app-service-mobile/app-service-mobile-windows-store-dotnet-get-started-push.md

Exam O

QUESTION 1
HOTSPOT
You are developing a service where customers can report news events from a browser using Azure Web PubSub. The service is implemented as an Azure App that the JSON WebSocket suprotocol to receive news events.
You need to implement the bindings for the Azure Function App.
How should you configure the binding? To answer, select the appropriate options in the answer area.
Note: Each Correct Selection in worth one point.

Hot Area:

Answer Area:



Section:
Explanation:

QUESTION 2
A company maintains multiple web and mobile applications. Each application uses custom in-house identity providers as well as social identity providers.
You need to implement single sign-on (SSO) for all the applications.
What should you do?

A. Use Azure Active Directory B2C (Azure AD B2C) with custom policies. Most Voted
B. Use Azure Active Directory B2B (Azure AD B2B) and enable external collaboration.
C. Use Azure Active Directory B2C (Azure AD B2C) with user flows.
D. Use Azure Active Directory B2B (Azure AD B2B).

Correct Answer: A
Section:
Explanation:
https://docs.microsoft.com/en-us/azure/active-directory-b2c/custom-policy-reference-sso

QUESTION 3
You are developing an application to store business-critical data in Azure Blob storage. The application must meet the following requirements:
- Data must not be modified or deleted for a user-specified interval.
- Data must be protected from overwntes and deletes.
- Data must be written once and allowed to be read many times.

You need to protect the data fen the Azure Blob storage account.
Which two actions should you perform? Each correct answer presents part of the solution.
NOTE: Each correct selection is worth one point.

A. Enable version-level immutability support for the storage account.
B. Create an account shared-access signature (SAS).
C. Enable point-in-time restore for containers in the storage account.
D. Create a service shared-access signature (SAS).
E. Enable the blob change feed for the storage account.

Correct Answer: D, E
Section:

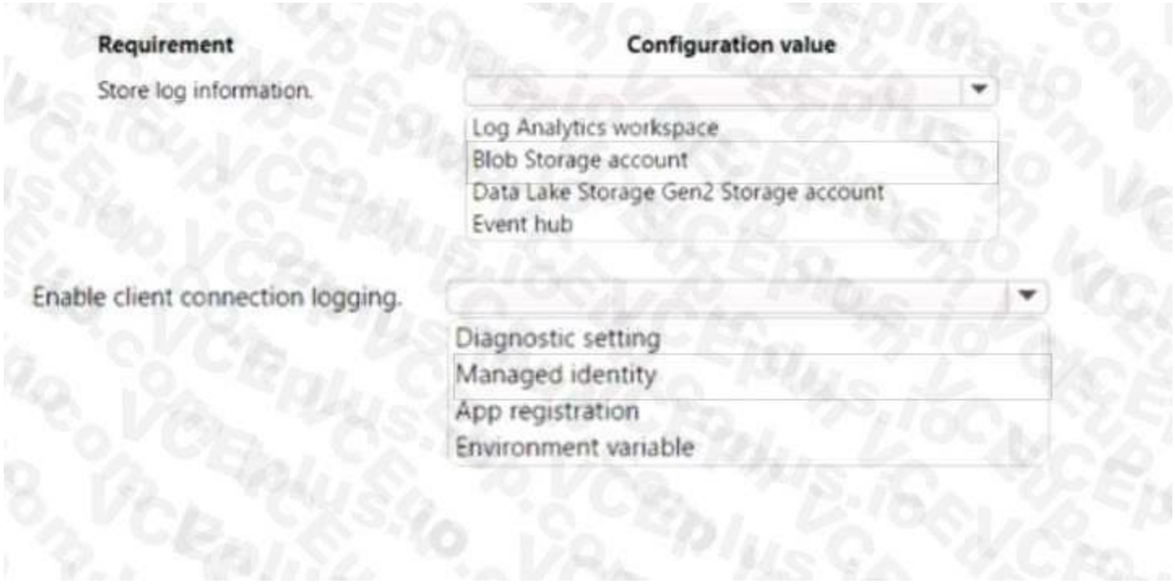
QUESTION 4
You develop Azure Durable Functions to manage vehicle loans.
The loan process includes multiple actions that must be run in a specified order. One of the actions includes a customer credit check process, which may require multiple days to process.
You need to implement Azure Durable Functions for the loan process.
Which Azure Durable Functions type should you use?

A. orchestrator
B. client
C. activity
D. entity

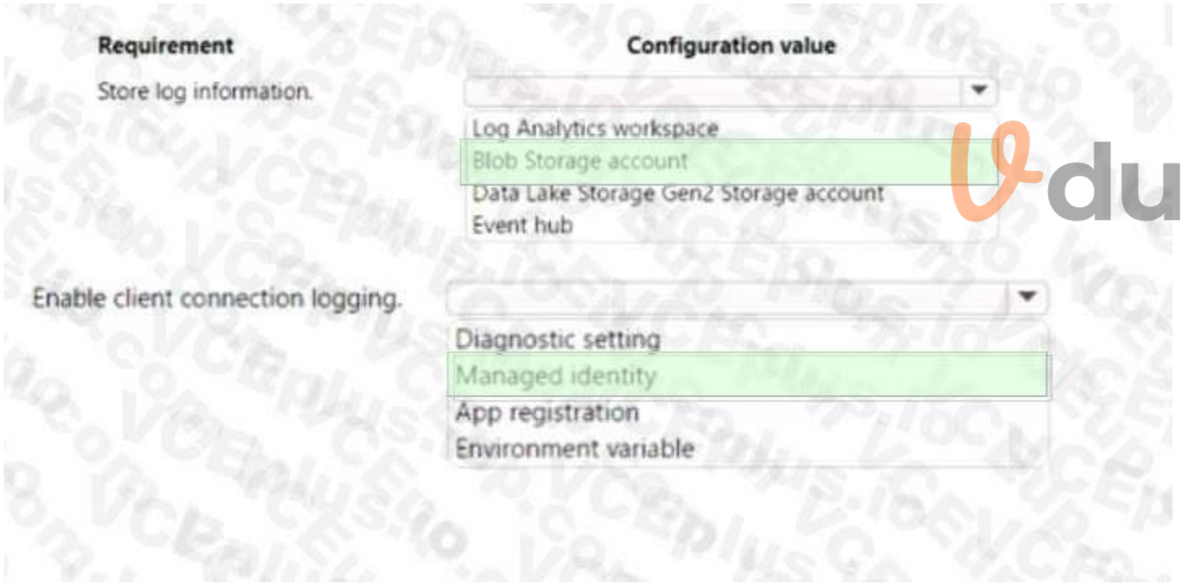
Correct Answer: A
Section:

QUESTION 5
HOTSPOT
You develop and deploy an Azure App Service web app that connects to Azure Cache for Redis as a content cache. An resources have been deployed to East US 2 region.
The security team requires the from Azure Cache for Redis:
The number of Redis client connections from an associated IP address.
Redis operations completed on the content cache.
The location (region) in which the Azure Cache for Redis instance was accessed.
The audit information must be captured and analyzed by a security team application deployed to Central US region
You need to log information on all client corrections to the cache.
Which configuration values should you use?

Hot Area:



Answer Area:

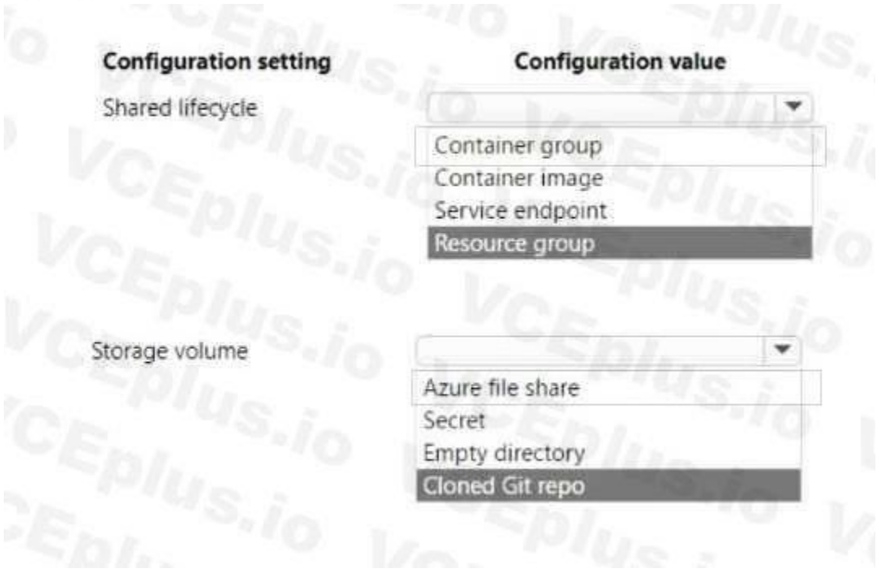


Section:
Explanation:

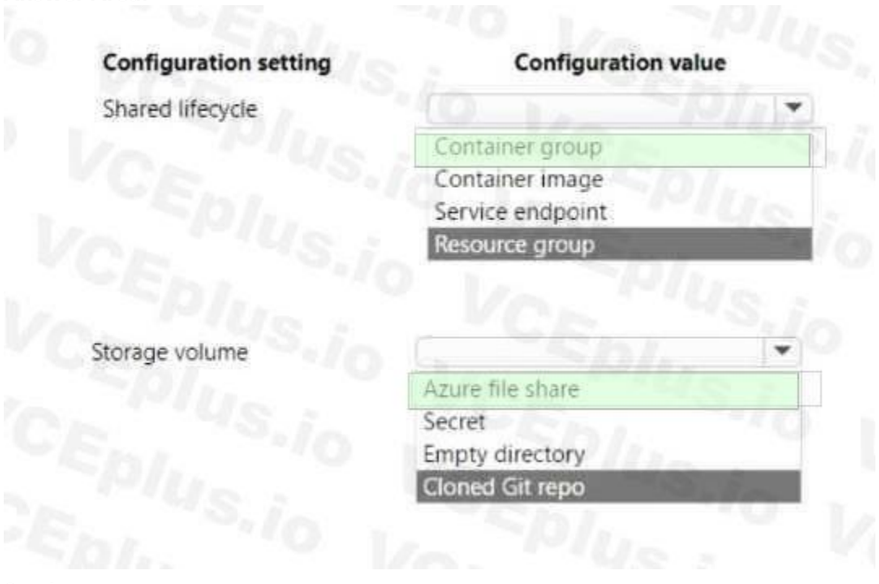
QUESTION 6
HOTSPOT
You are developing an application that includes two Docker containers.
The application must meet the following requirements
The containers must not run as root.
The containers must be deployed to Azure Container Instances by using a YAML file.
The containers must share a lifecycle, resources, local network and storage volume.
The storage volume must persist through container crashes.
The storage volume must be destroyed on stop or restart of the containers.

You need to configure Azure Container Instances for the application.

Hot Area:



Answer Area:



Section:
Explanation:

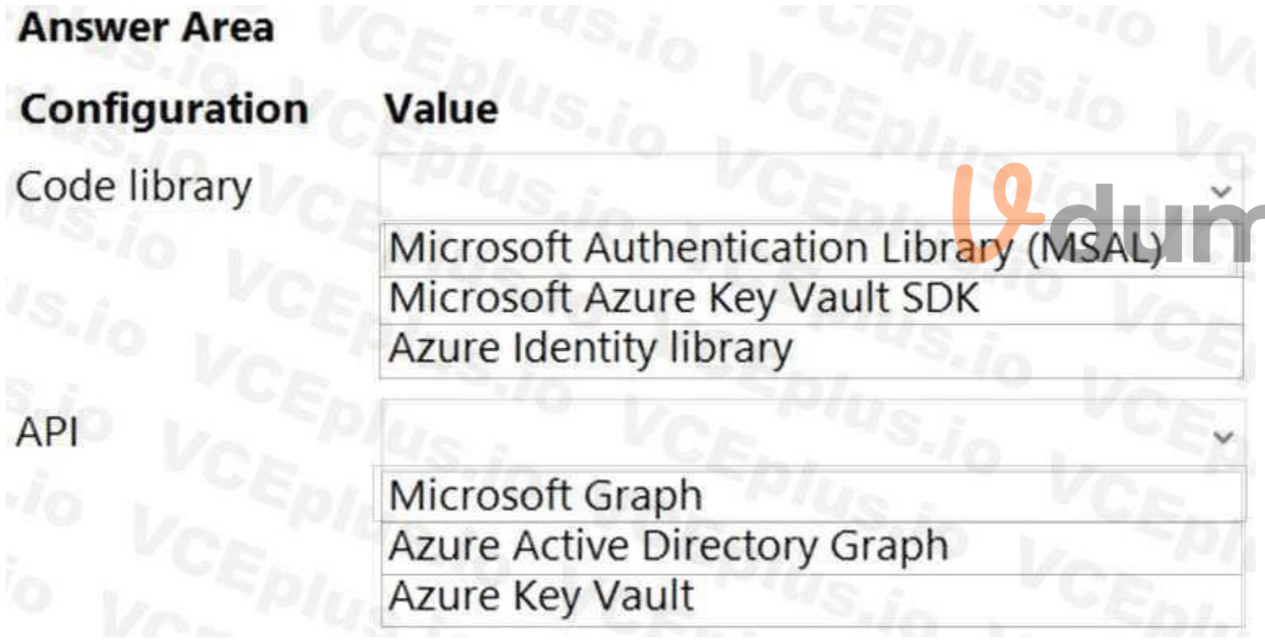
QUESTION 7
You are developing a .Net web application that stores data is Azure Consmos DB. The application must use the Core API and allow millions of reads and writes. The Azure Cosmos DII account has been created with multiple write region enabled. The application has been deployed to the East US2 and Central US region.
You need to update the application to support multi-region writes.
What are two possible ways to achieve this goal? Each correct answer presents parts of the solutions.
NOTE: Each correct selection is worth one point.

A. Update the ConnectionPolicy class for the Cosmos client and populate the PreferredLocations property based on the geo-proximity of the application.
B. Update Azure Cosmos DB to use the Strong consistency level. Add indexed properties to the container to indicate region.
C. Update the ConnectionPolicy class for the Cosmos client and set the UseMultipleWriteLocations property to true.
D. Create and deploy a custom conflict resolution policy.
E. Update Azure Cosmos DB to use the Session consistency level. Send the SessionToken property value from the FeedResponse object of the write action to the end-user by using a cookie.

Correct Answer: C, D
Section:

QUESTION 8
HOTSPOT
You need to implement the Azure Function for delivery driver profile information.
Which configurations should you use? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:

Answer Area

Configuration	Value
Code library	Microsoft Authentication Library (MSAL) Microsoft Azure Key Vault SDK Azure Identity library
API	Microsoft Graph Azure Active Directory Graph Azure Key Vault

Section:
Explanation:
https://docs.microsoft.com/en-us/azure/active-directory/develop/msal-overview

QUESTION 9
DRAG DROP
You are authoring a set of nested Azure Resource Manager templates to deploy multiple Azure resources.
The templates must be tested before deployment and must follow recommended practices.
You need to validate and test the templates before deployment.
Which tools should you use? To answer, drag the appropriate tools to the correct requirements. Each tool 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.
NOTE: Each correct selection is worth one point.

Select and Place:

Tools

- Parameter file
- Template function
- Azure Resource Manager test toolkit
- User-defined function
- What-if operation
- Azure Deployment Manager

Answer Area

Requirement	Tool
Determine whether the templates follow recommended practices.	Tool
Test and validate changes that templates will make to the environment.	Tool

Correct Answer:

Tools	Answer Area	
Parameter file	**Requirement**	**Tool**
Template function	Determine whether the templates follow recommended practices.	Azure Resource Manager test toolkit
	Test and validate changes that templates will make to the environment.	What-if operation
User-defined function		
Azure Deployment Manager		

Section:
Explanation:
https://docs.microsoft.com/en-us/azure/azure-resource-manager/templates/test-toolkit
https://docs.microsoft.com/en-us/azure/azure-resource-manager/templates/deploy-whatif?tabs=azure-powershell

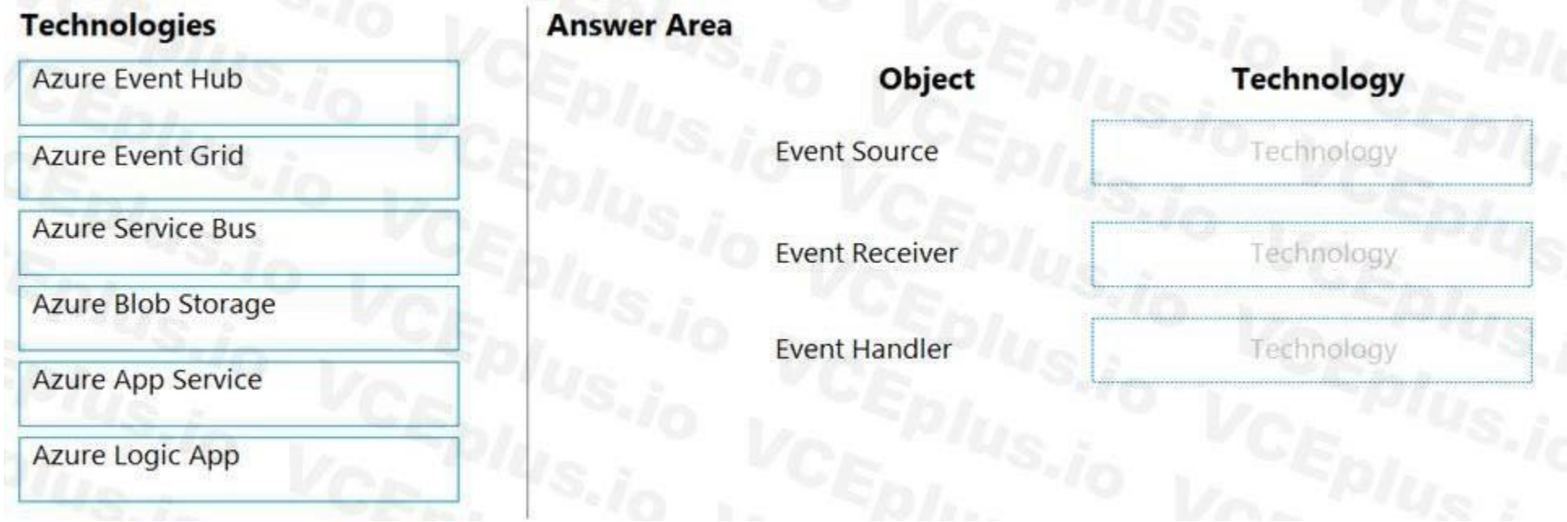
QUESTION 10
Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.
After 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.
You are developing an Azure solution to collect point-of-sale (POS) device data from 2,000 stores located throughout the world. A single device can produce 2 megabytes (MB) of data every 24 hours. Each store location has one to five devices that send data.
You must store the device data in Azure Blob storage. Device data must be correlated based on a device identifier. Additional stores are expected to open in the future.
You need to implement a solution to receive the device data.
Solution: Provision an Azure Event Hub. Configure the machine identifier as the partition key and enable capture.
Does the solution meet the goal?

A. Yes
B. No

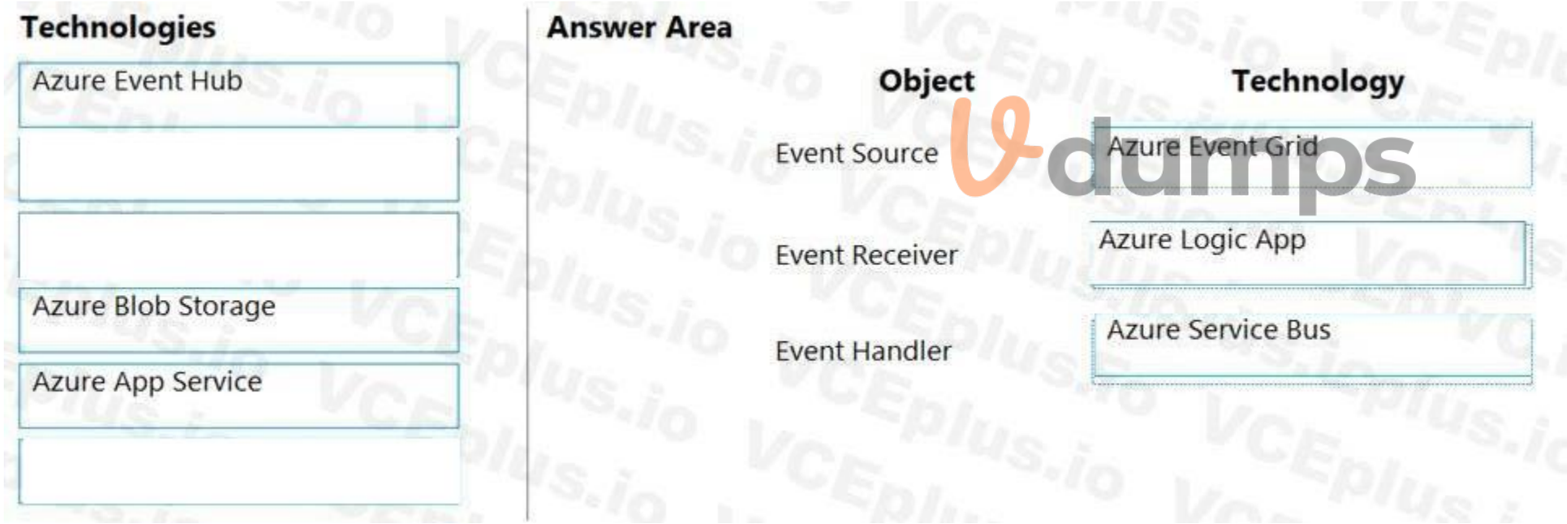
Correct Answer: A
Section:
Explanation:
Reference:
https://docs.microsoft.com/en-us/azure/event-hubs/event-hubs-programming-guide

QUESTION 11
DRAG DROP
You are developing an Azure solution to collect inventory data from thousands of stores located around the world. Each store location will send the inventory data hourly to an Azure Blob storage account for processing.
The solution must meet the following requirements:
Begin processing when data is saved to Azure Blob storage.
Filter data based on store location information.
Trigger an Azure Logic App to process the data for output to Azure Cosmos DB.
Enable high availability and geographic distribution.
Allow 24-hours for retries.
Implement an exponential back off data processing.
You need to configure the solution.
What should you implement? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Select and Place:



Correct Answer:



Section:

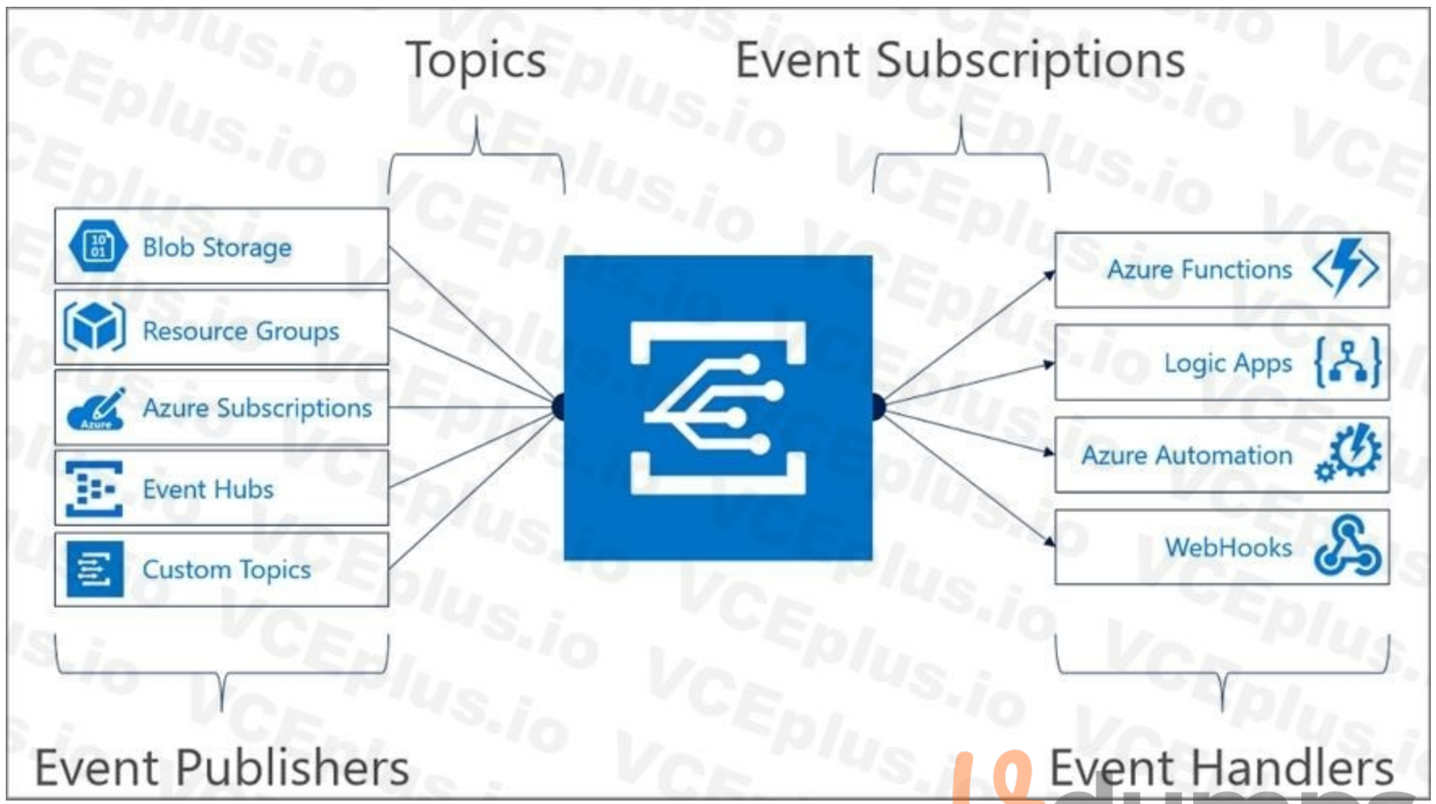
Explanation:

Box 1: Azure Event Grid

Blob storage events are pushed using Azure Event Grid to subscribers such as Azure Functions, Azure Logic Apps, or even to your own http listener. Event Grid provides reliable event delivery to your applications through rich retry policies and dead-lettering.

Box 2: Azure Logic App

Event Grid uses event subscriptions to route event messages to subscribers. This image illustrates the relationship between event publishers, event subscriptions, and event handlers.



Box 3: Azure Service Bus
The Event Grid service doesn't store events. Instead, events are stored in the Event Handlers, including ServiceBus, EventHubs, Storage Queue, WebHook endpoint, or many other supported Azure Services.
Reference:
https://docs.microsoft.com/en-us/azure/storage/blobs/storage-blob-event-overview
https://docs.microsoft.com/en-us/java/api/overview/azure/messaging-eventgrid-readme

QUESTION 12
You are creating an app that will use CosmosDB for data storage. The app will process batches of relational data.
You need to select an API for the app.
Which API should you use?

A. MongoDB API
B. Table API
C. SQL API
D. Cassandra API

Correct Answer: C
Section:
Explanation:
For relational data you will need the SQL API
Incorrect Answer:
A: The MongoDB API is not used for relational data.
B: The Table API only supports data in the key/value format
D: The Cassandra API only supports OLTP (Online Transactional Processing) and not batch processing.
Reference:

https://docs.microsoft.com/en-us/azure/cosmos-db/choose-api

QUESTION 13
HOTSPOT
You are developing a .NET application that communicates with Azure Storage.
A message must be stored when the application initializes.
You need to implement the message.
How should you complete the code segment? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area:

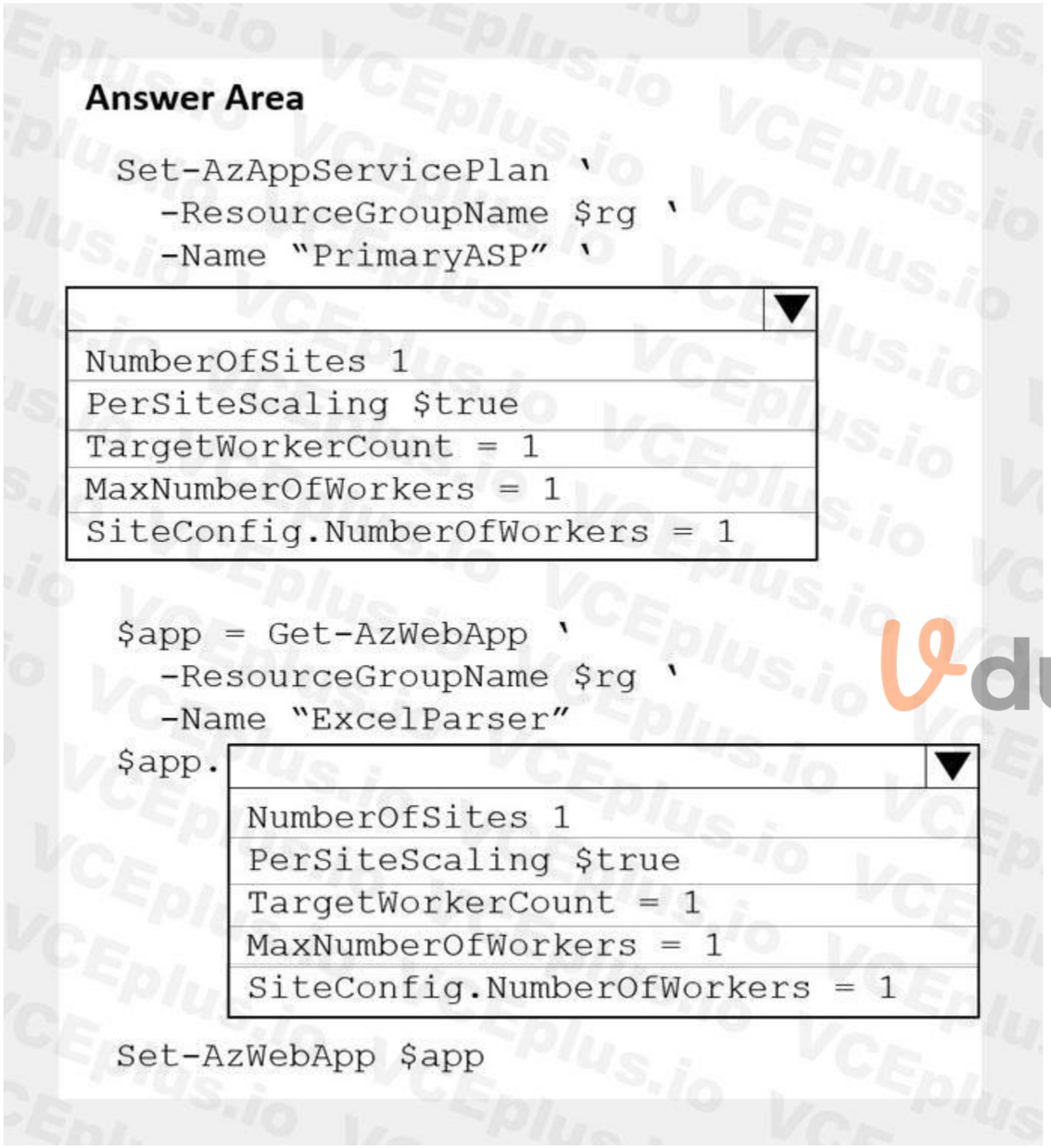
Answer Area

```
CloudStorageAccount storageAccount = CloudStorageAccount.Parse
(CloudConfigurationManager.GetSetting ("StorageConnectionString"));

[ CloudQueueClient | CloudTableClient | CloudQueue | CloudTable ] pVar1 = storageAccount.
[ CreateCloudQueueClient | CreateCloudTableClient | GetQueueReference | GetTableReference ] ();

[ CloudQueueClient | CloudTableClient | CloudQueue | CloudTable ] pVar2 = pVar1.
[ CreateCloudQueueClient | CreateCloudTableClient | GetQueueReference | GetTableReference ] ("contoso-storage");

try
{
  await pVar2.CreateIfNotExistsAsync();
}
catch (StorageException x)
{
  throw;
}
CloudQueueMessage cloudQueueMessage = new CloudQueueMessage("App Launch: <iUserID>");
await pVar2.AddMessageAsync(cloudQueueMessage);
```

Section:
Explanation:
Reference:
https://docs.microsoft.com/en-us/azure/storage/queues/storage-dotnet-how-to-use-queues?tabs=dotnetv11

QUESTION 14
HOTSPOT
A software as a service (SaaS) company provides document management services. The company has a service that consists of several Azure web apps. All Azure web apps run in an Azure App Service Plan named PrimaryASP.
You are developing a new web service by using a web app named ExcelParser. The web app contains a third-party library for processing Microsoft Excel files. The license for the third-party library stipulates that you can only run a single instance of the library.
You need to configure the service.
How should you complete the script? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:

Answer Area

```
Set-AzAppServicePlan '
  -ResourceGroupName $rg '
  -Name "PrimaryASP" '
```

[▼]

- NumberOfSites 1
- PerSiteScaling $true
- TargetWorkerCount = 1
- MaxNumberOfWorkers = 1
- SiteConfig.NumberOfWorkers = 1

```
$app = Get-AzWebApp '
  -ResourceGroupName $rg '
  -Name "ExcelParser"
$app.
```

[▼]

- NumberOfSites 1
- PerSiteScaling $true
- TargetWorkerCount = 1
- MaxNumberOfWorkers = 1
- SiteConfig.NumberOfWorkers = 1

```
Set-AzWebApp $app
```

Section:
Explanation:
Reference:
https://docs.microsoft.com/en-us/azure/app-service/manage-scale-per-app

QUESTION 15
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.
You develop an HTTP triggered Azure Function app to process Azure Storage blob data. The app is triggered using an output binding on the blob.
The app continues to time out after four minutes. The app must process the blob data.

You need to ensure the app does not time out and processes the blob data.
Solution: Update the functionTimeout property of the host.json project file to 10 minutes.
Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section:
Explanation:
Instead pass the HTTP trigger payload into an Azure Service Bus queue to be processed by a queue trigger function and return an immediate HTTP success response.
Note: Large, long-running functions can cause unexpected timeout issues. General best practices include:
Whenever possible, refactor large functions into smaller function sets that work together and return responses fast. For example, a webhook or HTTP trigger function might require an acknowledgment response within a certain time limit; it's common for webhooks to require an immediate response. You can pass the HTTP trigger payload into a queue to be processed by a queue trigger function. This approach lets you defer the actual work and return an immediate response.
Reference:
https://docs.microsoft.com/en-us/azure/azure-functions/functions-best-practices

QUESTION 16
You need to implement a solution to resolve the retail store location data issue.
Which three Azure Blob features should you enable? Each correct answer presents part of the solution.
NOTE: Each correct selection is worth one point.

A. Soft delete
B. Change feed
C. Snapshots
D. Object replication
E. Immutability
F. Versioning

Correct Answer: A, B, F
Section:
Explanation:
Scenario: You must perform a point-in-time restoration of the retail store location data due to an unexpected and accidental deletion of data.Before you enable and configure point-in-time restore, enable its prerequisites for the storage account: soft delete, change feed, and blob versioning.Reference:https://docs.microsoft.com/en-us/azure/storage/blobs/point-in-time-restore-manage

QUESTION 17
You need to secure the Azure Functions to meet the security requirements.
Which two actions should you perform? Each correct answer presents part of the solution.
NOTE: Each correct selection is worth one point.

A. Store the RSA-HSM key in Azure Key Vault with soft-delete and purge-protection features enabled.
B. Store the RSA-HSM key in Azure Blob storage with an immutability policy applied to the container.
C. Create a free tier Azure App Configuration instance with a new Azure AD service principal.
D. Create a standard tier Azure App Configuration instance with an assigned Azure AD managed identity.
E. Store the RSA-HSM key in Azure Cosmos DB. Apply the built-in policies for customer-managed keys and allowed locations.

Correct Answer: A, D

Section:
Explanation:
Scenario: All Azure Functions must centralize management and distribution of configuration data for different environments and geographies, encrypted by using a company-provided RSA-HSM key.
Microsoft Azure Key Vault is a cloud-hosted management service that allows users to encrypt keys and small secrets by using keys that are protected by hardware security modules (HSMs).
You need to create a managed identity for your application. Reference:
https://docs.microsoft.com/en-us/azure/app-service/app-service-key-vault-references

QUESTION 18
You manage a data processing application that receives requests from an Azure Storage queue.
You need to manage access to the queue. You have the following requirements:
Provide other applications access to the Azure queue.
Ensure that you can revoke access to the queue without having to regenerate the storage account keys. Specify access at the queue level and not at the storage account level.
Which type of shared access signature (SAS) should you use?

A. Service SAS with a stored access policy
B. Account SAS
C. User Delegation SAS
D. Service SAS with ad hoc SAS

Correct Answer: A
Section:
Explanation:
A service SAS is secured with the storage account key. A service SAS delegates access to a resource in only one of the Azure Storage services: Blob storage, Queue storage, Table storage, or Azure Files.
Stored access policies give you the option to revoke permissions for a service SAS without having to regenerate the storage account keys.
Incorrect Answers:
Account SAS: Account SAS is specified at the account level. It is secured with the storage account key. User Delegation SAS: A user delegation SAS applies to Blob storage only. Reference:
https://docs.microsoft.com/en-us/azure/storage/common/storage-sas-overview

QUESTION 19
You need to audit the retail store sales transactions.
What are two possible ways to achieve the goal? Each correct answer presents a complete solution.
NOTE: Each correct selection is worth one point.

A. Update the retail store location data upload process to include blob index tags. Create an Azure Function to process the blob index tags and filter by store location.
B. Process the change feed logs of the Azure Blob storage account by using an Azure Function. Specify a time range for the change feed data.
C. Enable blob versioning for the storage account. Use an Azure Function to process a list of the blob versions per day.
D. Process an Azure Storage blob inventory report by using an Azure Function. Create rule filters on the blob inventory report.
E. Subscribe to blob storage events by using an Azure Function and Azure Event Grid. Filter the events by store location.

Correct Answer: B, E
Section:
Explanation:
Scenario: Audit store sale transaction information nightly to validate data, process sales financials, and reconcile inventory.
"Process the change feed logs of the Azure Blob storage account by using an Azure Function. Specify a time range for the change feed data": Change feed support is well-suited for scenarios that process data based on objects that have changed.
For example, applications can:
Store, audit, and analyze changes to your objects, over any period of time, for security, compliance or intelligence for enterprise data management.
"Subscribe to blob storage events by using an Azure Function and Azure Event Grid. Filter the events by store location":

Azure Storage events allow applications to react to events, such as the creation and deletion of blobs. It does so without the need for complicated code or expensive and inefficient polling services. The best part is you only pay for what you use.
Blob storage events are pushed using Azure Event Grid to subscribers such as Azure Functions, Azure Logic Apps, or even to your own http listener. Event Grid provides reliable event delivery to your applications through rich retry policies and deadlettering.
Incorrect Answers:
"Enable blob versioning for the storage account. Use an Azure Function to process a list of the blob versions per day": You can enable Blob storage versioning to automatically maintain previous versions of an object. When blob versioning is enabled, you can access earlier versions of a blob to recover your data if it is modified or deleted. Reference:
https://docs.microsoft.com/en-us/azure/storage/blobs/storage-blob-change-feed https://docs.microsoft.com/enus/azure/storage/blobs/storage-blob-event-overview

QUESTION 20
HOTSPOT
You need to implement the retail store location Azure Function.
How should you configure the solution? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

Configuration	Value
Binding	Blob storage Azure Cosmos DB Event Grid HTTP
Binding Direction	Input Output
Trigger	Blob storage Azure Cosmos DB Event Grid HTTP

Answer Area:

Answer Area

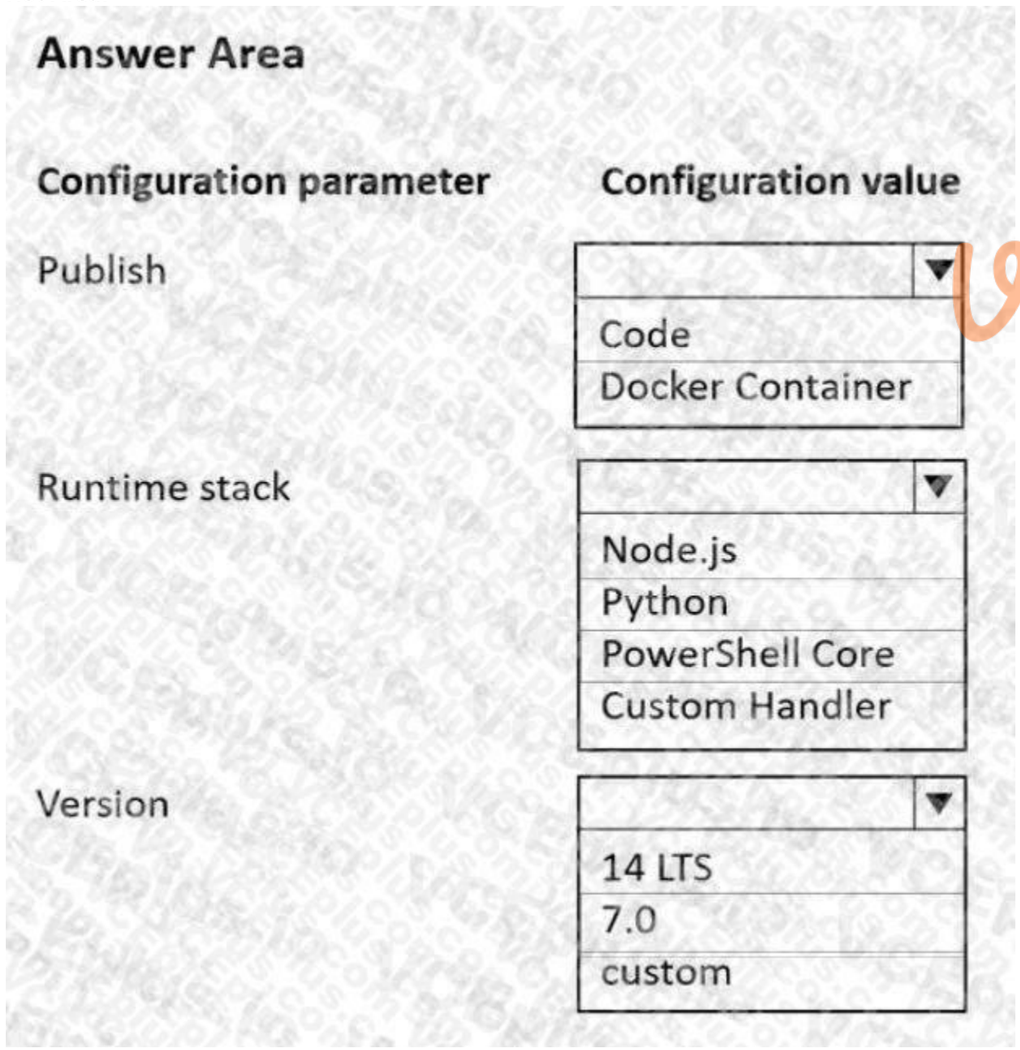
Configuration	Value
Binding	Blob storage / Azure Cosmos DB / Event Grid / **HTTP**
Binding Direction	**Input** / Output
Trigger	**Blob storage** / Azure Cosmos DB / Event Grid / HTTP

Section:
Explanation:
Scenario: Retail store locations: Azure Functions must process data immediately when data is uploaded to Blob storage.
Box 1: HTTP
Binding configuration example: https://.blob.core.windows.net
Box 2: Input
Read blob storage data in a function: Input binding

Box 3: Blob storage
The Blob storage trigger starts a function when a new or updated blob is detected.
Azure Functions integrates with Azure Storage via triggers and bindings. Integrating with Blob storage allows you to build functions that react to changes in blob data as well as read and write values.
Reference:
https://docs.microsoft.com/en-us/azure/azure-functions/functions-bindings-storage-blob-trigger

QUESTION 21
HOTSPOT
You are developing an Azure Function App. You develop code by using a language that is not supported by the Azure Function App host. The code language supports HTTP primitives.
You must deploy the code to a production Azure Function App environment.
You need to configure the app for deployment.
Which configuration values should you use? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:

Answer Area

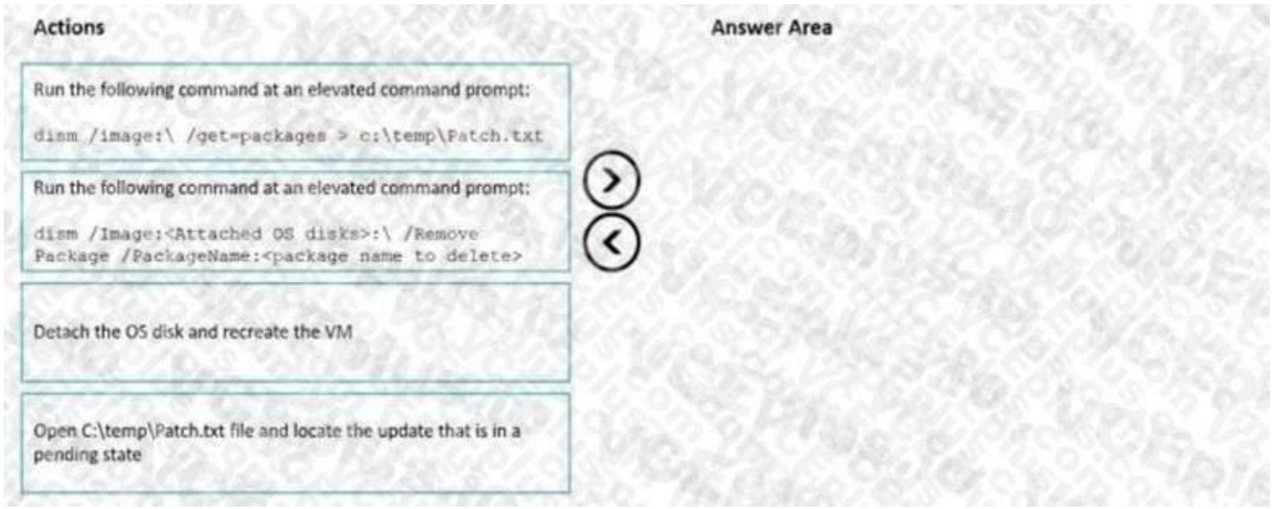
Configuration parameter	Configuration value
Publish	Code / **Docker Container**
Runtime stack	Node.js / Python / **PowerShell Core** / Custom Handler
Version	14 LTS / **7.0** / custom

Section:
Explanation:
Box 1: Docker container
A custom handler can be deployed to every Azure Functions hosting option. If your handler requires operating system or platform dependencies (such as a language runtime), you may need to use a custom container. You can create and deploy your code to Azure Functions as a custom Docker container.
Box 2: PowerShell core
When creating a function app in Azure for custom handlers, we recommend you select .NET Core as the stack. A "Custom" stack for custom handlers will be added in the future.
PowerShell Core (PSC) is based on the new .NET Core runtime.
Box 3: 7.0
On Windows: The Azure Az PowerShell module is also supported for use with PowerShell 5.1 on Windows.
On Linux: PowerShell 7.0.6 LTS, PowerShell 7.1.3, or higher is the recommended version of PowerShell for use with the Azure Az PowerShell module on all platforms. Reference:
https://docs.microsoft.com/en-us/azure/azure-functions/functions-create-function-linux-custom-image
https://docs.microsoft.com/en-us/powershell/azure/install-az-ps?view=azps-7.1.0

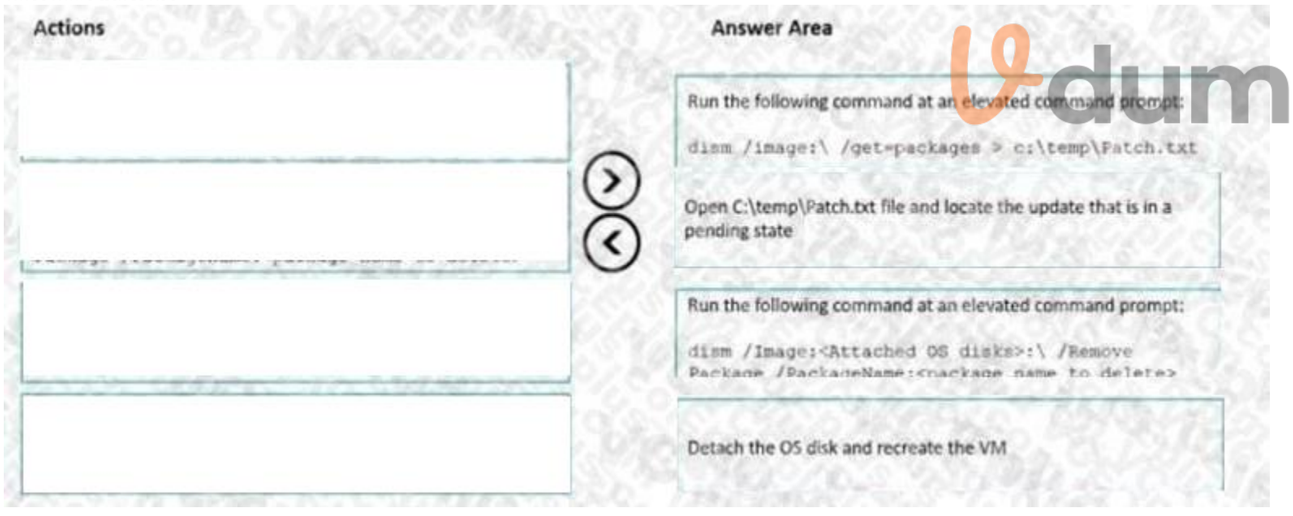
QUESTION 22
DRAG DROP
You provision virtual machines (VMs) as development environments.

One VM does not start. The VM is stuck in a Windows update process. You attach the OS disk for the affected VM to a recovery VM.
You need to correct the issue.
In which order should you perform the actions? To answer, 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:



Section:
Explanation:
Remove the update that causes the problem
1. Take a snapshot of the OS disk of the affected VM as a backup.
2. Attach the OS disk to a recovery VM.
3. Once the OS disk is attached on the recovery VM, run diskmgmt.msc to open Disk Management, and ensure the attached disk is ONLINE.
4. (Step 1) Open an elevated command prompt instance (Run as administrator). Run the following command to get the list of the update packages that are on the attached OS disk:
dism /image::\ /get-packages > c:\temp\Patch_level
5. (Step 2) Open the C:\temp\Patch_level.txt file, and then read it from the bottom up. Locate the update that's in Install
Pending or Uninstall Pending state.
6. Remove the update that caused the problem:

dism /Image::\ /Remove-Package /PackageName:<>
7. (Step 4) Detach the OS disk and recreate the VM. Then check whether the issue is resolved. Reference:
https://docs.microsoft.com/en-us/troubleshoot/azure/virtual-machines/troubleshoot-stuck-updating-boot-error

QUESTION 23
You are developing a mobile app that uses an API which stores geospabal data in Azure Cosmos D& The app will be used to find restaurants in a particular area and related information including food types, menu information and the optimal route to a selected restaurant from the user's current location.
Which Azure Cosmos DB API should you use for the API?

A. MongoDB
B. Gremlin
C. Cassandra
D. Core

Correct Answer: A
Section:

QUESTION 24
You are designing a web application to manage user satisfaction surveys. The number of questions that a survey includes is variable.
Application users must be able to display results for a survey as quickly as possible. Users must also be able to quickly compute statistical measures including average values across various groupings of answers.
Which Azure Cosmos 06 API should you use for the application?

A. Core
B. Mongo DB
C. Gremlin
D. Table API

Correct Answer: D
Section:

QUESTION 25
You ate developing an application that allows users to find musicians that ate looking for work. The application must store information about musicians, the instruments that they play, and other related data.
The application must also allow users to determine which musicians have played together, including groups of three or more musicians that have performed together at a specific location.
Which Azure Cosmos D6 API should you use for the application?

A. Core
B. MongoDB
C. Cassandra
D. Gremlin

Correct Answer: B
Section:

QUESTION 26
You deploy an API to API Management
You must secure all operations on the API by using a client certificate.
You need to secure access to the backend service of the API by using client certificates.
Which two security features can you use?

A. Azure AD token
B. Self-signed certificate
C. Certificate Authority (CA) certificate
D. Triple DES (3DES) cipher
E. Subscription key

Correct Answer: B, C
Section:

QUESTION 27
You have an Azure Cosmos 06 instance that uses the Strong consistency level and 10,000 Request Units (RUs) per container. <3eo-replication is enabled.
The instance stores restaurant information including location, menu items, and start. You currently store information for 1,000 restaurant locations, 500 menu items, and 10,000 staff members. You select the location id as the partition key.
How many logical partitions will be created for the container?

A. 500
B. 1,100
C. 10.000
D. 10,000,000

Correct Answer: C
Section:

QUESTION 28
You ate designing a small app that will receive web requests containing encoded geographic coordinates. Calls to the app will occur infrequently.
Which compute solution should you recommend?

A. Azure Functions
B. Azure App Service
C. Azure Batch
D. Azure API Management

Correct Answer: B
Section:

QUESTION 29
Your company has several containers based on the following operating systems:
- Windows Server 2019 Nano Server
- Windows Server 2019 Server Core
- Windows Server 2022 Nano Server
- Windows Server 2022 Server Core
- Linux
You plan to migrate the containers to an Azure Kubernetes cluster. What is the minimum number of node pools that the cluster must have?

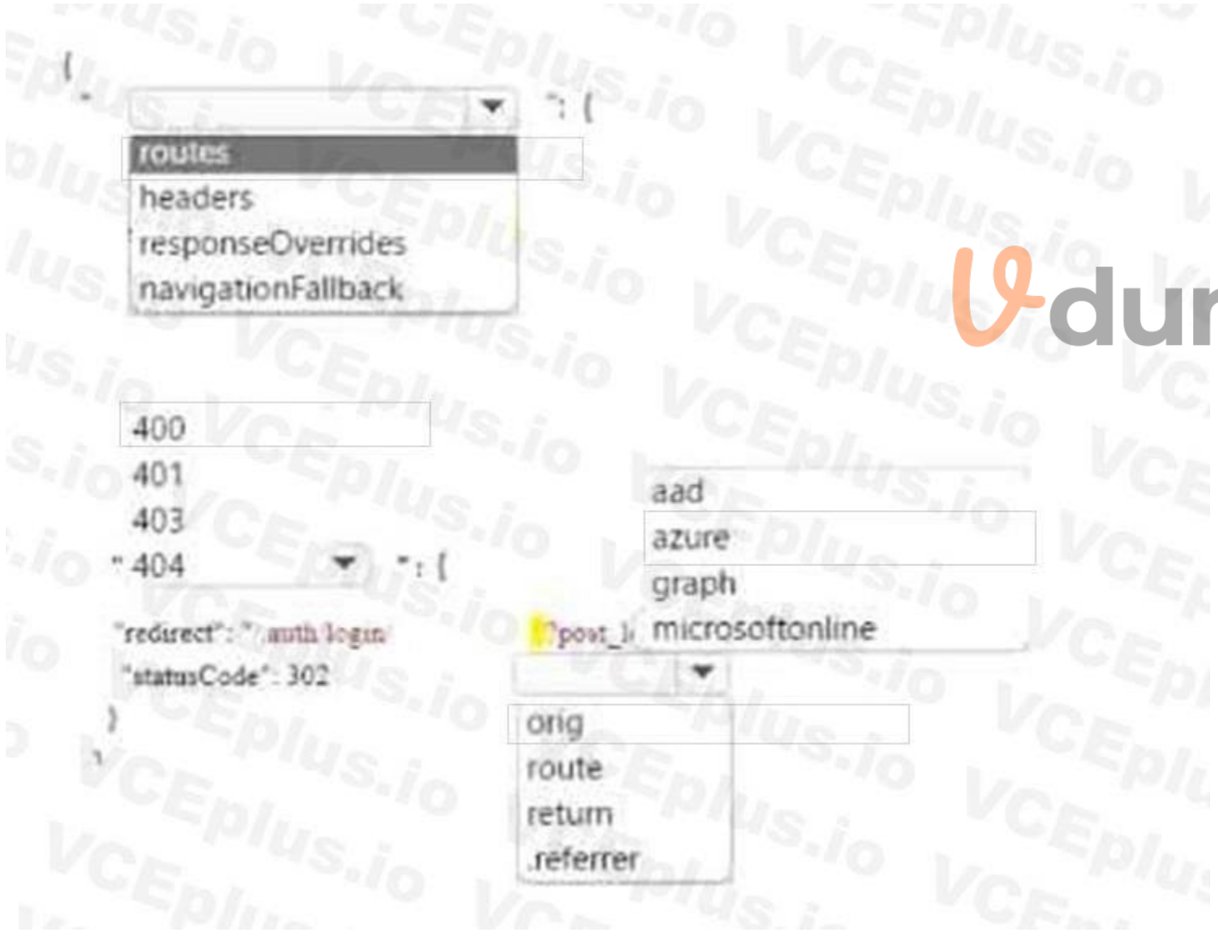
A. 1
B. 2

C. 3
D. 6

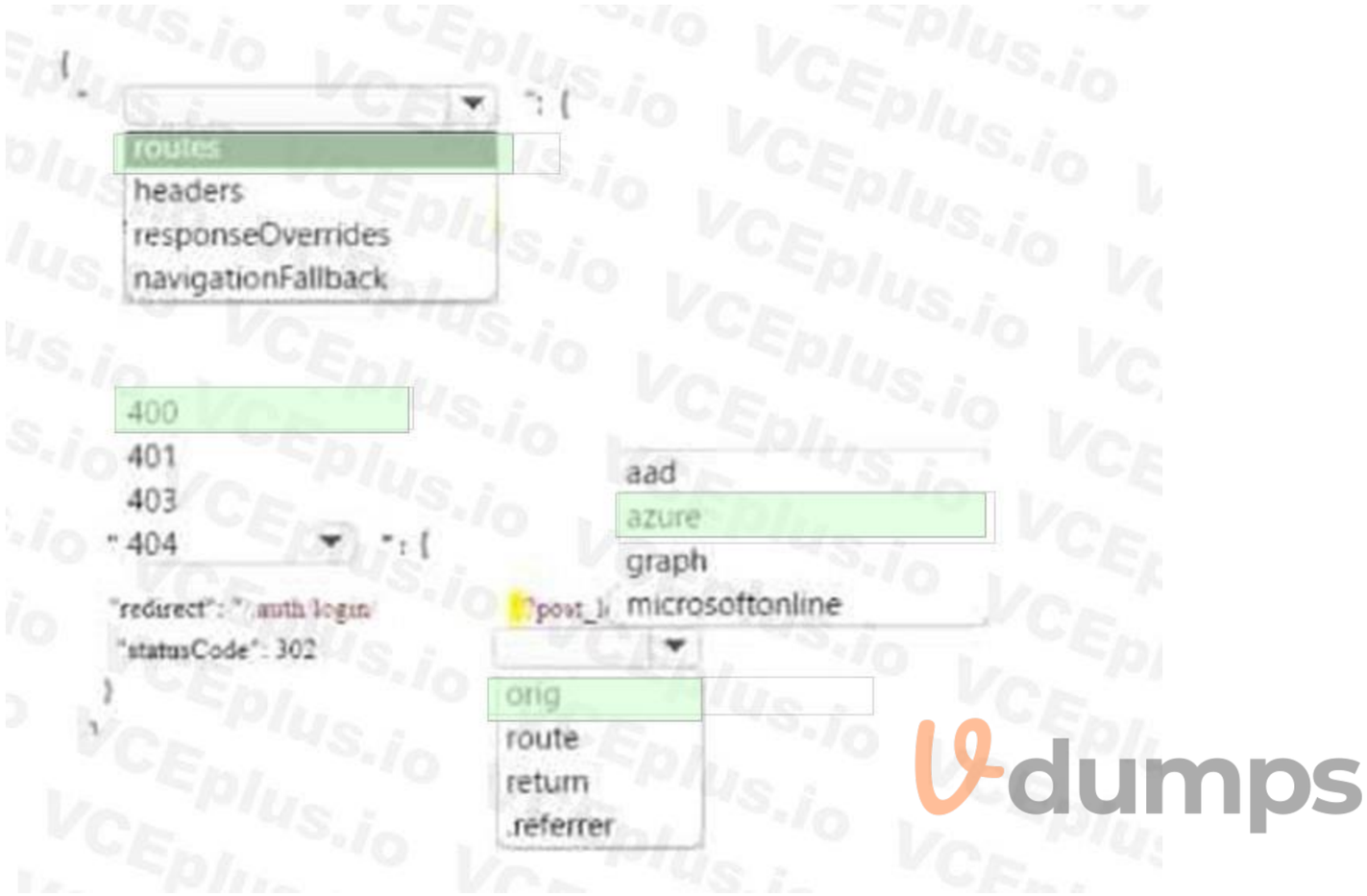
Correct Answer: C
Section:

QUESTION 30
HOTSPOT
You are developing an Azure Static Web app that contains training materials for a tool company. Each tool's training material is contained In a static web page that Is linked from the tool's publicly available description page.
A user must be authenticated using Azure AD prior to viewing training.
You need to ensure That the user can view training material pages after authentication.
How should you complete the configuration file? To answer, select the appropriate options In the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:



Section:
Explanation:

QUESTION 31
You are creating an Azure key vault using PowerShell. Objects deleted from the key vault must be kept for a set period of 90 days.
Which two of the following parameters must be used in conjunction to meet the requirement?
(Choose two.)

A. EnabledForDeployment
B. EnablePurgeProtection
C. EnabledForTemplateDeployment
D. EnableSoftDelete

Correct Answer: B, D
Section:

QUESTION 32
Your company purchases an Azure subscription and plans to migrate several on-premises virtual machines to Azure. You need to design the infrastructure required or the Azure virtual machines solution. What should you include in the design?

A. the number of Azure Storage accounts
B. the settings of the Azure virtual networks
C. the size of the virtual machines
D. the number of Azure regions

Correct Answer: C
Section:

QUESTION 33
You need to design network connectivity for a subnet in an Azure virtual network. The subnet will contain 30 virtual machines. The virtual machines will establish outbound connections to internet hosts by using the same a pool of four public
IP addresses, inbound connections to the virtual machines will be prevented.
What should include in the design?

A. Azure Private Link
B. NAT Gateway
C. User Defined Routes
D. Azure Virtual WAN

Correct Answer: D
Section:

QUESTION 34
Your company is designing an application named App1 that will use data from Azure SQL Database.
App1 will be accessed over the internet by many users.
You need to recommend a solution for improving the performance ofApp1.
What should you include in the recommendation?

A. Azure HPC cache
B. ExpressRoute
C. a CON profile
D. Azure Cache for Redis

Correct Answer: D
Section:

QUESTION 35
You are designing a multi-tiered application that will be hosted on Azure virtual machines. The virtual machines will run Windows Server. Front-end servers will be accessible from the Internet over port 443. The other servers will NOT be directly accessible over the internet You need to recommend a solution to manage the virtual machines that meets the following requirement
- Allows the virtual machine to be administered by using Remote Desktop.
- Minimizes the exposure of the virtual machines on the Internet Which Azure service should you recommend?

A. Azure Bastion
B. Service Endpoint
C. Azure Private Link
D. Azure Front Door

Correct Answer: C
Section:

QUESTION 36
You develop and deploy an Azure App Service web app to a production environment. You enable the Always On setting and the Application Insights site extensions. You deploy a code update and receive multiple failed requests and exceptions in the web app. You need to validate the performance and failure counts of the web app in near real time. Which Application Insights tool should you use?

A. Snapshot Debugger
B. Profiler
C. Smart Detection
D. Live Metrics Stream
E. Application Map

Correct Answer: D
Section:

QUESTION 37
You are building a web application that uses the Microsoft identity platform for user authentication.
You are implementing user identification for the web application. You need to retrieve a claim to uniquely identify a user. Which claim type should you use?

A. oid
B. aud
C. idp
D. nonce

Correct Answer: A
Section:

QUESTION 38
DRAG DROP
You develop and deploy a web app to Azure App Service in a production environment. You scale out the web app to four instances and configure a staging slot to support changes.
You must monitor the web app in the environment to include the following requirements:
- Increase web app availability by re-routing requests away from instances with error status codes and automatically replace instances if they remain in an error state after one hour.
- Send web server logs, application logs, standard output and standard error messaging to an Azure Storage blob account.
You need to configure Azure App Service.
Which values should you use? To answer, drag the appropriate configuration value to the correct requirements. Each configuration value may be used once, more than....

Select and Place:

Configuration values

- Health check
- Diagnostic setting
- Deployment slot
- Autoscale rule
- Zone redundancy

Answer Area

Requirement	Configuration value
Increase availability	
Send logs	

Correct Answer:

Configuration values

- Health check
- Diagnostic setting
- Deployment slot

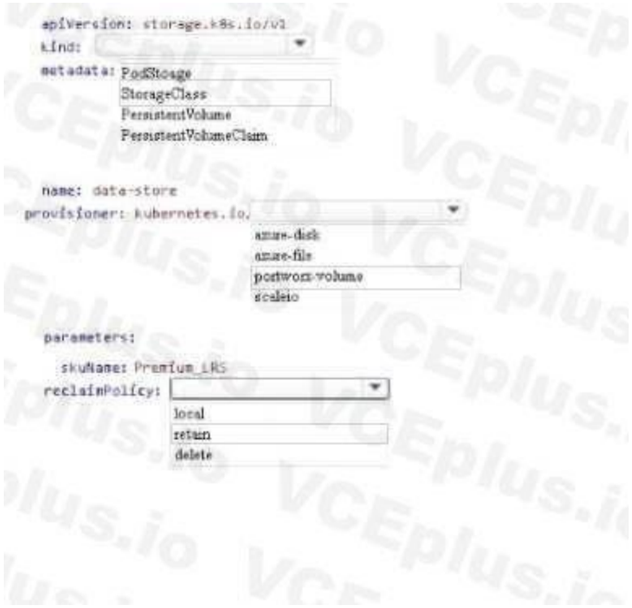
Answer Area

Requirement	Configuration value
Increase availability	Autoscale rule
Send logs	Zone redundancy

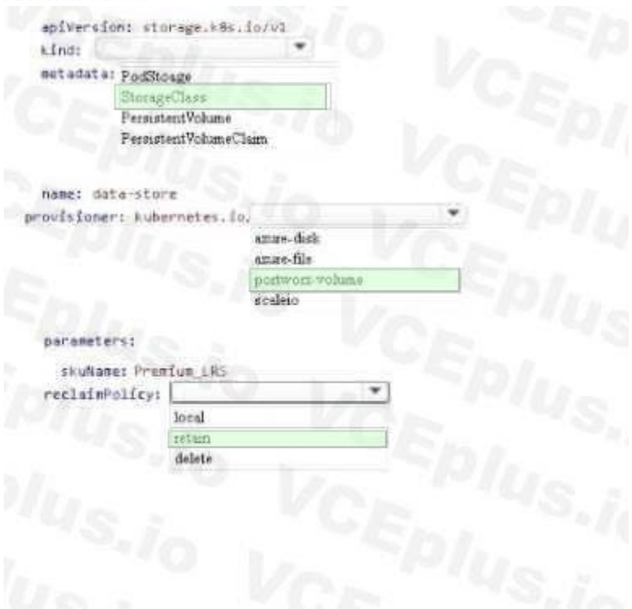
Section:
Explanation:

QUESTION 39
HOTSPOT
You are developing an application that runs in several customer Azure Kubernetes Service clusters, Within each cluster, a pod runs that collects performance data to be analyzed later, a large amount of data is collected so saving latency must be minimized.The performance data must be stored so that pod restarts do not impact the stored data. Write latency should be minimized.
You need to configure blob storage.
How should you complete the YAML configuration? To answer, select the appropriate options in the answer area.

Hot Area:



Answer Area:

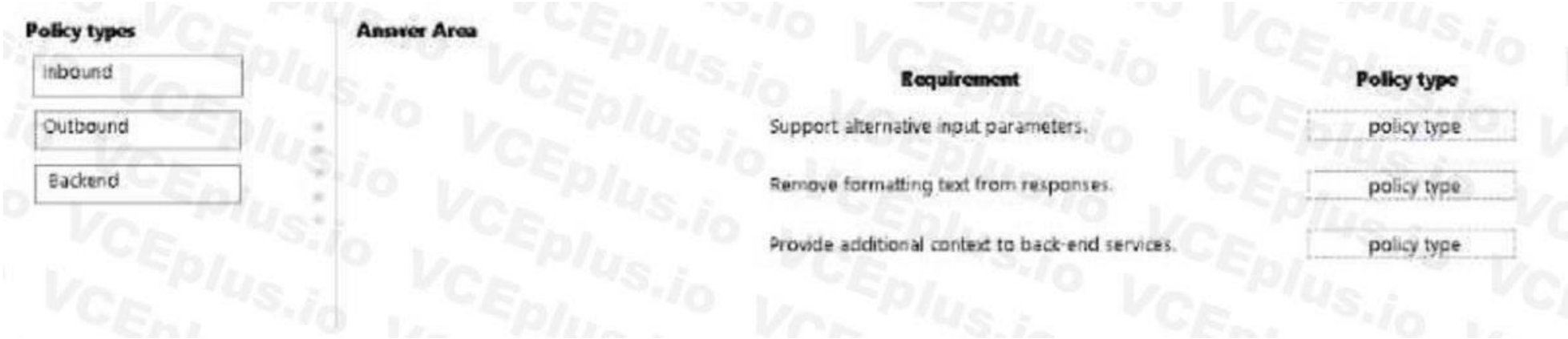


Section:
Explanation:

QUESTION 40
DRAG DROP
You have an application that provides weather forecasting data to external partners. You use Azure API Management to publish APIs.
You must change the behavior of the API to meet the following requirements:
• Support alternative input parameters.
• Remove formatting text from responses.
• Provide additional context to back-end services.

Which types of policies should you implement? To answer, drag the policy types to the correct scenarios. Each policy type 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
NOTE: Each correct selection is worth one point.

Select and Place:



Correct Answer:

Section:
Explanation:

QUESTION 41
HOTSPOT
You are a developer building a web site using a web app. The web site stores configuration data in Azure App Configuration. Access to Azure App Configuration has been configured to use the identity of the web app for authentication.
Security requirements specify that no other authentication systems must be used.
You need to load configuration data from Azure App Configuration.
How should you complete the code? To answer, select the appropriate options in the answer area.

Hot Area:

```
public static IHostBuilder CreateHostBuilder(string[] args) =>
  Host.CreateDefaultBuilder(args)
  .ConfigureWebHostDefaults(wb =>
  {
    wb.ConfigureAppConfiguration((hc, config) =>
    {
      var settings = config.Build();
      config.                                  (options =>
```

AddAzureKeyVault
DefaultAzureCredential
ChainedTokenCredential
ManagedIdentityCredential
AddAzureAppConfiguration

```
      options.Connect(new Uri(settings["AppConfig:Endpoint"]),
        new                                    ());
```

AddAzureKeyVault
DefaultAzureCredential
ChainedTokenCredential
ManagedIdentityCredential
AddAzureAppConfiguration

Answer Area:

Section:
Explanation:

QUESTION 42
DRAG DROP
You are Implmenting an Azure solution that uses Azure Cosmos DB and the latest Azure Cosmos DB SDK. You add a change feed processor to a new container instance.
You attempt to lead a batch of 100 documents. The process falls when reading one of the documents. The solution must monior the progress of the change feed processor instance on the new container as the change feed is read. You must prevent the change feed processor from retrying the entire batch when one document cannot be read.
You need to implement the change feed processor to read the documents.
Which features should you use? To answer, drag the appropriate features to the correct requirements. Each feature may be used once, More than once, or not at all. You may need to drag The split bat between panes or scroll to view content.
Each correct selection is worth one point

Select and Place:

Features

- Change feed estimator
- Dead-letter queue
- Deployment unit
- Lease container

Answer Area

Requirement	Feature
Monitor the progress of the change feed processor.	Feature
Prevent the change feed processor from retrying the entire batch when one document cannot be read.	Feature

Correct Answer:

Features

- Change feed estimator

Answer Area

Requirement	Feature
Monitor the progress of the change feed processor.	Dead-letter queue
Prevent the change feed processor from retrying the entire batch when one document cannot be read.	Deployment unit

Section:
Explanation:

QUESTION 43
You are building a web application that performs image analysis on user photos and returns metadata containing objects identified. The image is very costly in terms of time and compute resources. You are planning to use Azure Redis
Cache so duplicate uploads do not need to be reprocessed.
In case of an Azure data center outage, metadata loss must be kept to a minimum. You need to configure the Azure Redis cache instance.
Which two actions should you perform?

A. Configure Azure Redis with rob persistence
B. Configure second storage account far persistence.
C. Set backup frequency to the minimum value.
D. Configure Azure Redis with AOF persistence

Correct Answer: B, C
Section:

QUESTION 44
HOTSPOT

You develop and deploy the following staticwebapp.config.json file to the app_location value specified in the workflow file of an Azure Static Web app.

```
{
"routes": [
  {
    "route": "/api/*",
    "methods": ["GET"],
    "allowedRoles": ["registeredusers"]
  },
  {
    "route": "/api/*",
    "methods": ["PUT", "POST", "PATCH", "DELETE"],
```

Hot Area:

Statements	Yes	No
Unauthenticated users are challenged to authenticate with GitHub.	○	○
A non-existent file in the /images/ folder will generate a 404 response code.	○	○
HTTP GET method requests from authenticated users in the role named **registeredusers** are sent to the API folder.	○	○
Authenticated users that are not in the role named **registeredusers** and unauthenticated users are served a 401 HTTP error when accessing the API folder.	○	○

Answer Area:

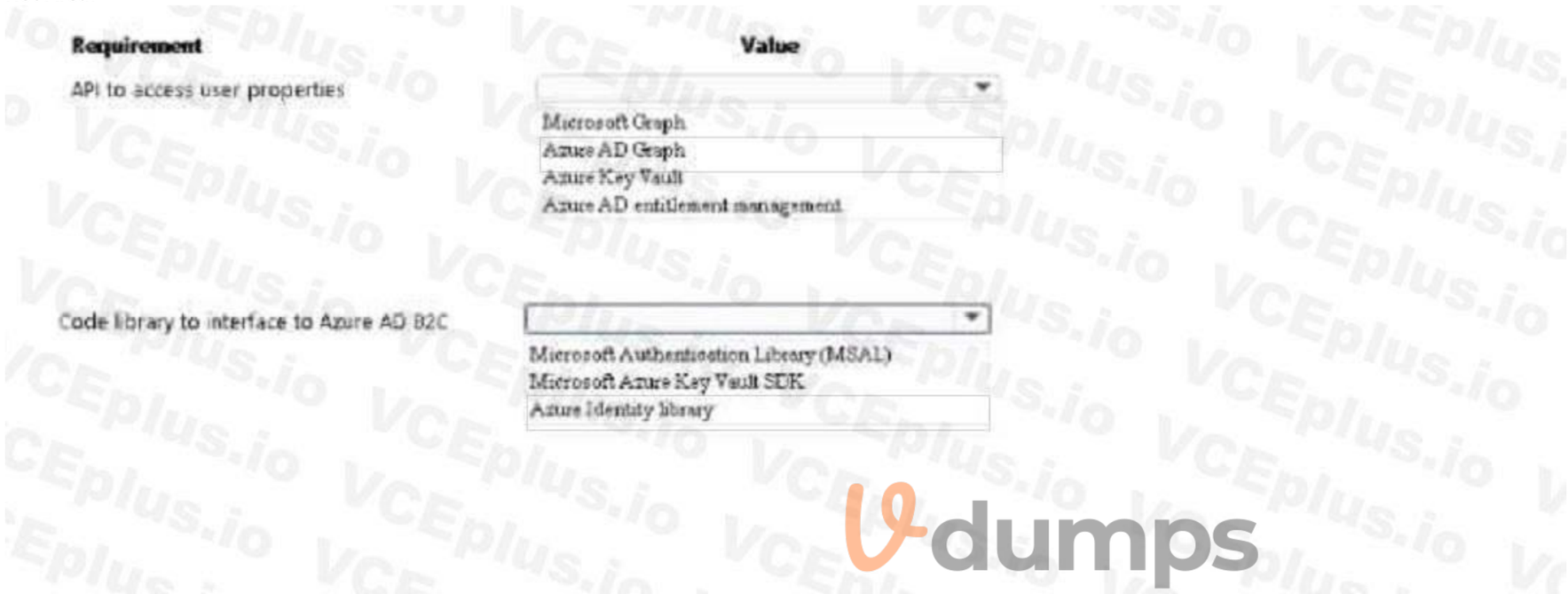
Statements	Yes	No
Unauthenticated users are challenged to authenticate with GitHub.	○	○
A non-existent file in the /images/ folder will generate a 404 response code.	○	○
HTTP GET method requests from authenticated users in the role named **registeredusers** are sent to the API folder.	○	○
Authenticated users that are not in the role named **registeredusers** and unauthenticated users are served a 401 HTTP error when accessing the API folder.	○	○

Section:
Explanation:

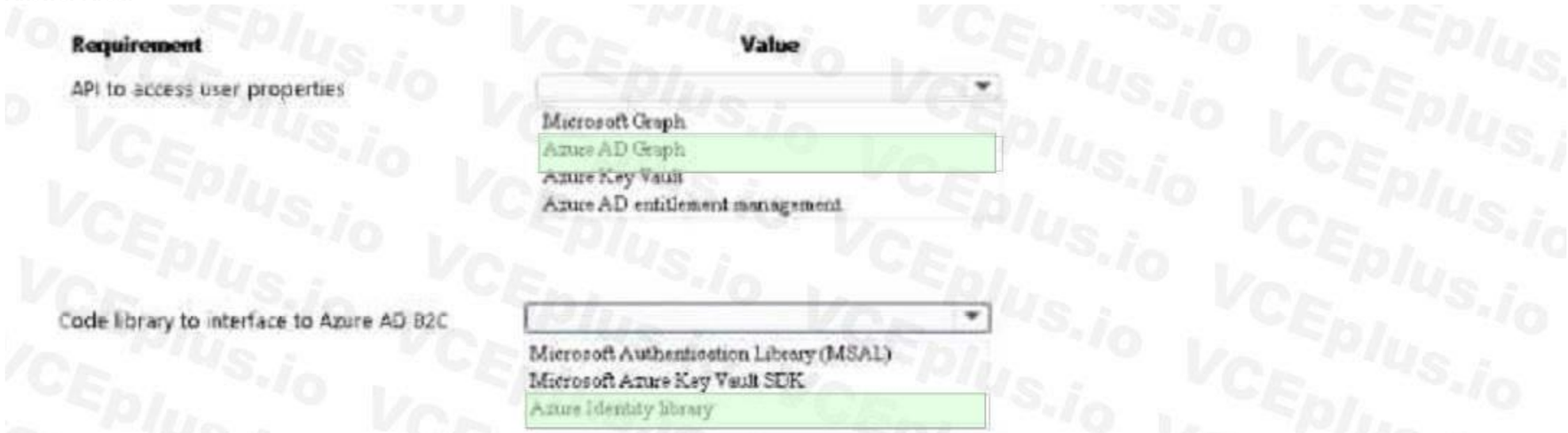
QUESTION 45
HOTSPOT
You develop and deploy a web app to Azure App service. The web app allows users to authenticate by using social identity providers through the Azure B2C service. All user profile information is stored in Azure B2C.
You must update the web app to display common user properties from Azure B2C to include the following information:
Email address
Job title

First name
Last name
Office Location
You need to implement the user properties in the web app.

Hot Area:



Answer Area:



Section:
Explanation:

QUESTION 46
You are building a web application that performs image analysis on user photos and returns metadata containing objects identified. The image analysis is very costly in terms of time and compute resources. You are planning to use Azure
Redo Cache so Cache uploads do not need to be reprocessed.
In case of an Azure data center outage metadata loss must be kept to a minimum.
You need to configure the Azure Redis cache instance.
Which two actions should you perform? Each correct answer presents part of the solution.
NOTE: Each correct selection in worth one point.

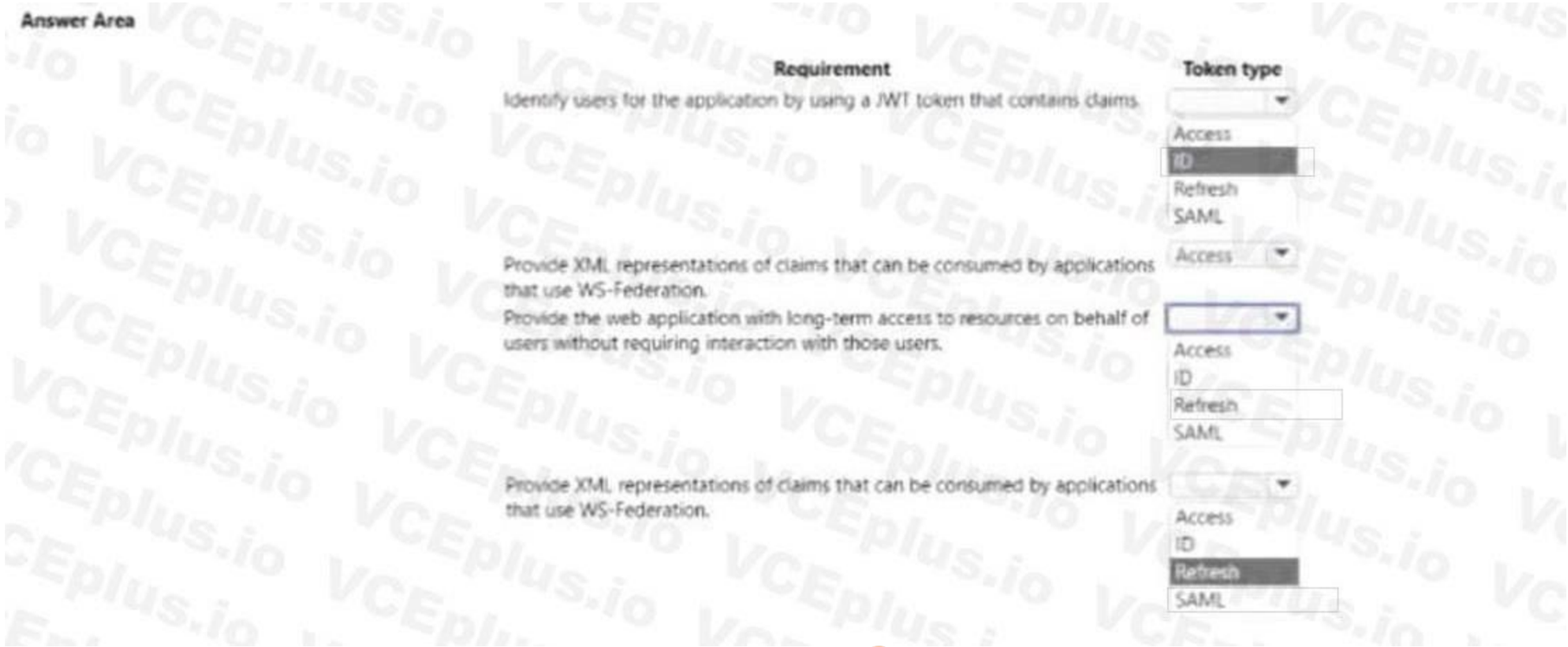
A. Configure Azure Redis with persistence
B. Configure second storage account for persistence
C. Set backup frequency to the minimum value
D. Configure Azure Redis with RDS persistence

Correct Answer: B, D
Section:

QUESTION 47
HOTSPOT
You are developing a web application that uses the Microsoft identify platform for user and resource authentication. The web application calls several REST APIs.
You are implementing various authentication and authorization flows for the web application.
You need to validate the claims in the authentication token.
Which token type should use? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area



Answer Area:

Section:

Explanation:

QUESTION 48
You develop and deploy an ASP.NET Core application that connects o an Azure Database for MySQL instance.
Connections to the database appear to drop intermittently and the application code does not handle the connection failure.
You need to handle the transient connection errors in code by implementing retries.
What are three possible ways to achieve this goal? Each correct answer presents part of the solution.
NOTE: Each correct selection is worth one point.

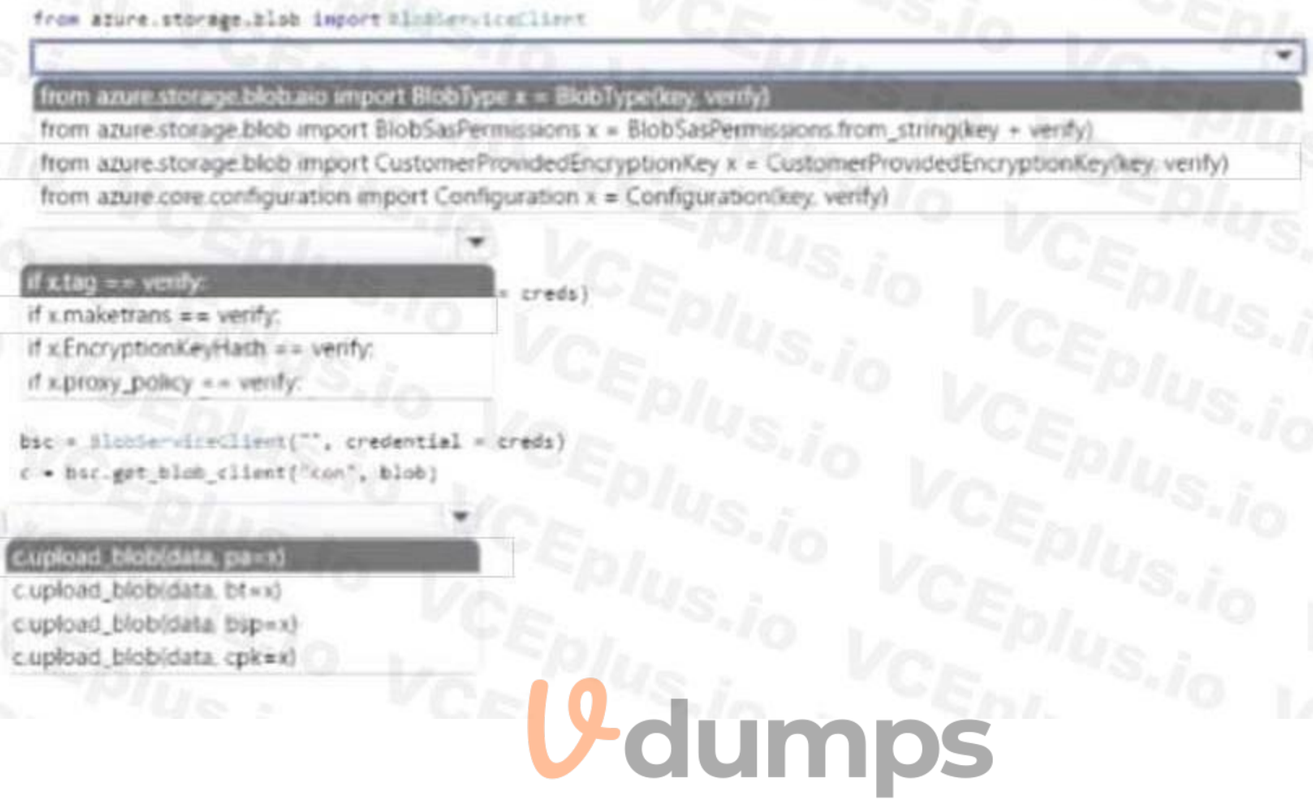
A. Increase connection repeat attempts exponentially up to 120 seconds.
B. Close the database connection and immediately report an error.
C. Wait five seconds before repeating the connection attempt to the database.
D. Disable connection pooling and configure a second Azure Database for MySQL instance.
E. Set a maximum number of connection attempts to 10 and report an error on subsequent connections.

Correct Answer: B, C, D
Section:

QUESTION 49
HOTSPOT
You are building an application that stores sensitive customer data in Azure Blob storage. The data must be encrypted with a key that is unique for each customer.
If the encryption key has been corrupted it must not be used for encryption.
You need to ensure that the blob is encrypted.
How should you complete the code segment? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

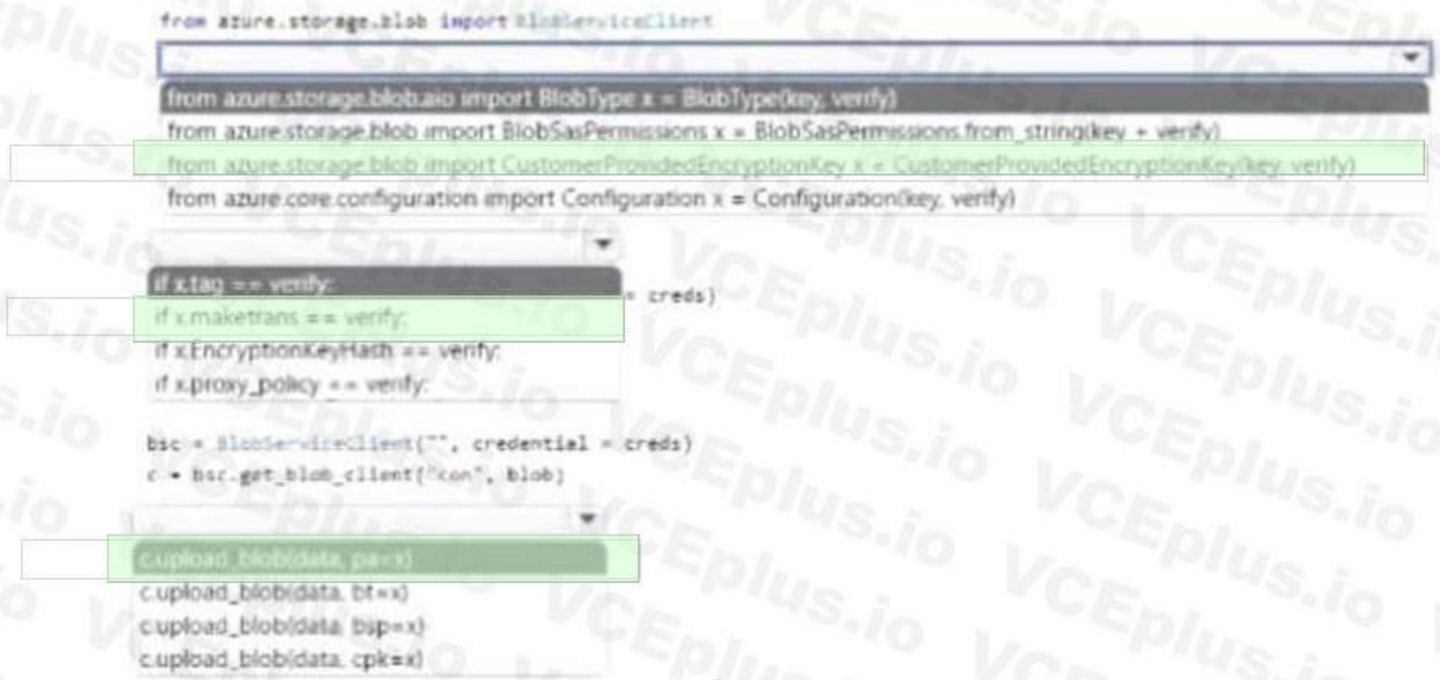
Hot Area:

Answer Area



Answer Area:

Answer Area



Section:
Explanation:

QUESTION 50
You are developing a user portal for a company.
You need to create a report for the portal that lists information about employees who are subject matter experts for a specific topic. You must ensure that administrators have full control and cosent over the data.
Which technology should you use?

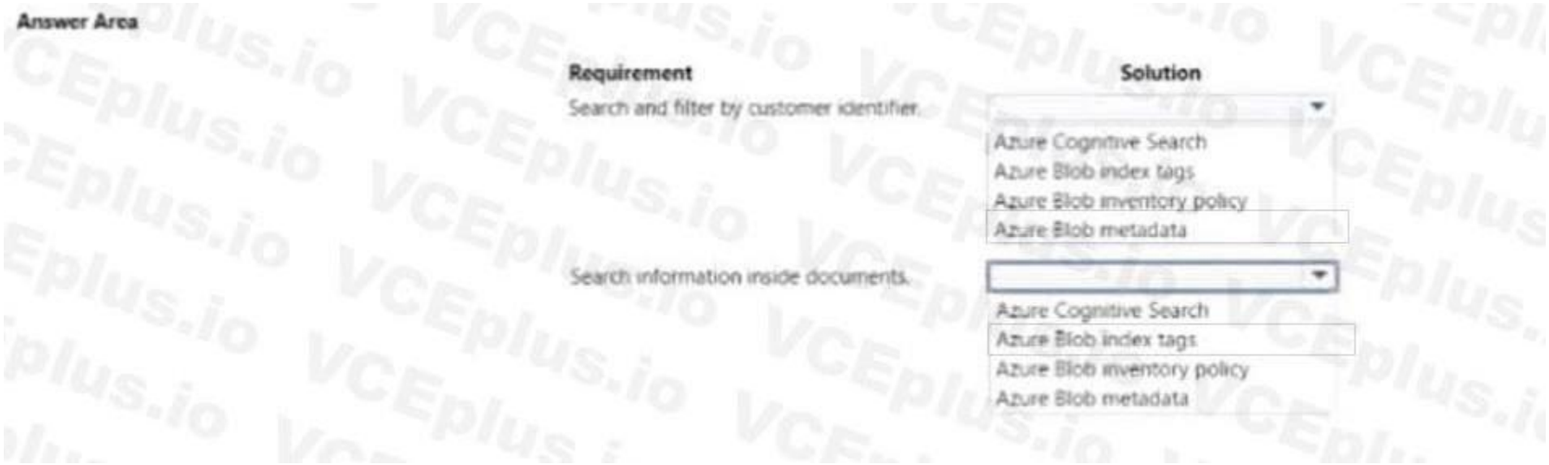
A. Microsoft Graph connectors
B. Microosft graph API
C. Microsoft Graph data connect

Correct Answer: C
Section:

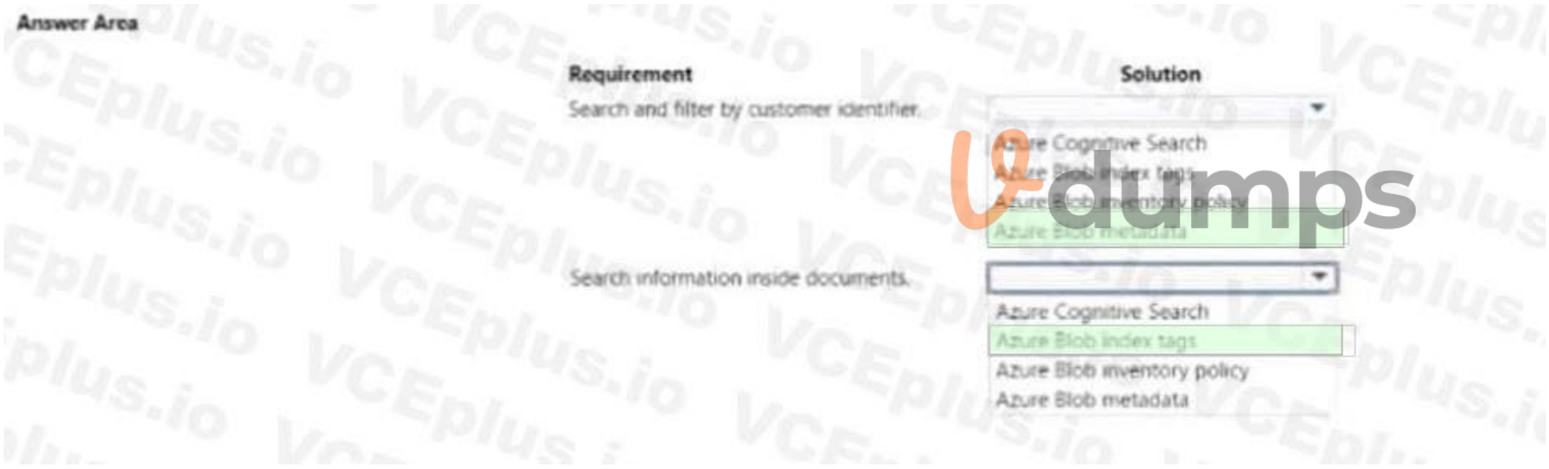
QUESTION 51
HOTSPOT
You are developing a solution to store documents in Azure Blob storage. Customers upload documents to multiple containers. Documents consist of PDF, CSV, Microsoft Office format, and plain text files.
The solution must process millions of documents across hundreds of containers. The solution must meet the following requirements:
* Document must the categorized by a customer identifier as they are uploaded to the storage account.
* Allow filtering by the customer identifier.
* Allow searching of information contained within a document.
* Minimize costs.
You created and configure a standard general-purpose v2 storage account to support the solution.
You need to implement the solution.

NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:



Section:
Explanation:

QUESTION 52
HOTSPOT
An organization deploys a Mob storage account. Users take multiple snapshots of the blob storage account over time.
You need to delete all snapshots or the blob storage account. You must not delete the blob storage account itself.
How should you complete the code segment? To answer select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

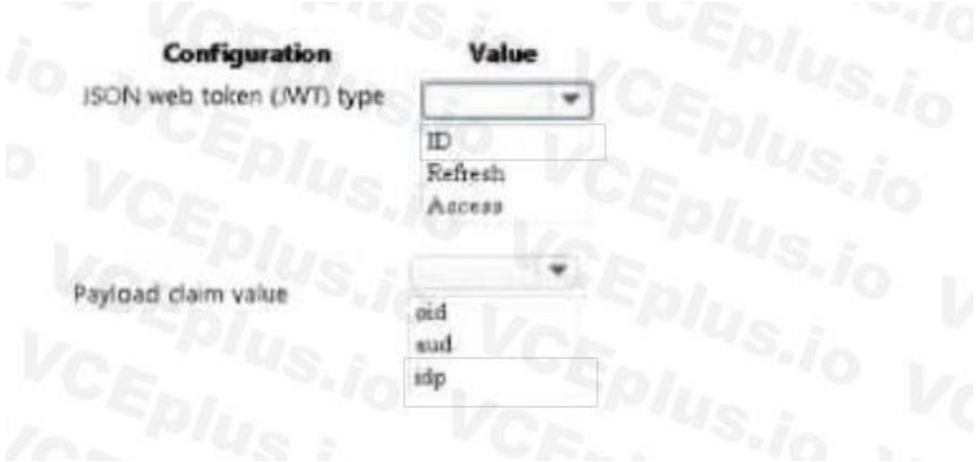
Answer Area:

Answer Area

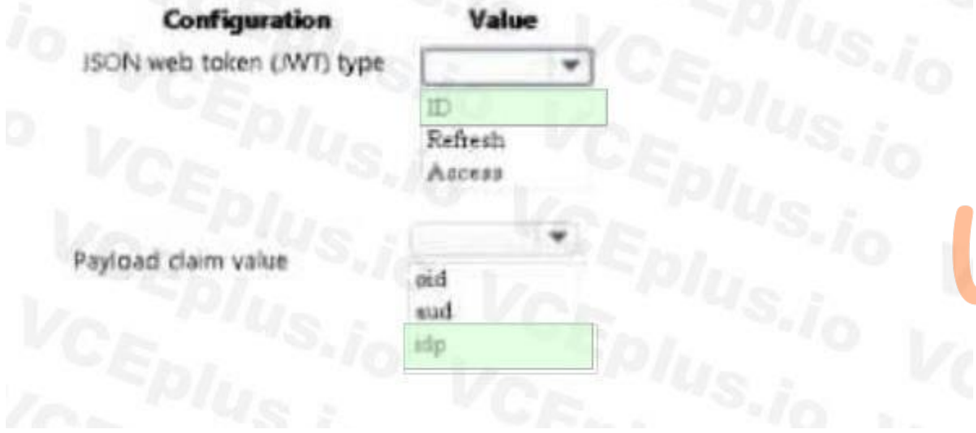
Section:
Explanation:

QUESTION 53
HOTSPOT
YOU need to reliably identify the delivery driver profile information.
How should you configure the system? To answer, select the appropriate options in the answer area.
NOTE Each correct selection is worth one point.

Hot Area:



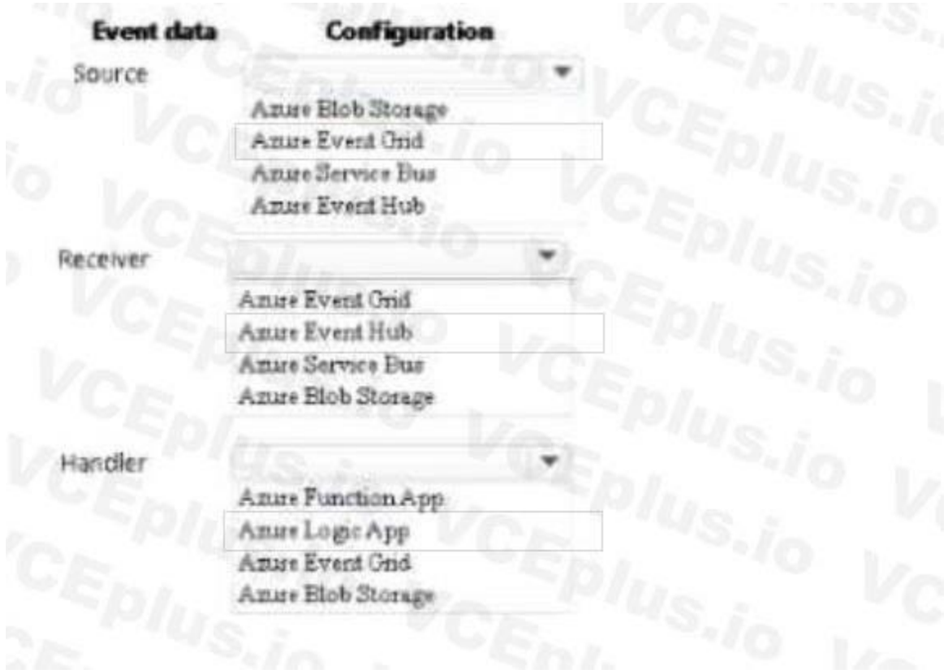
Answer Area:



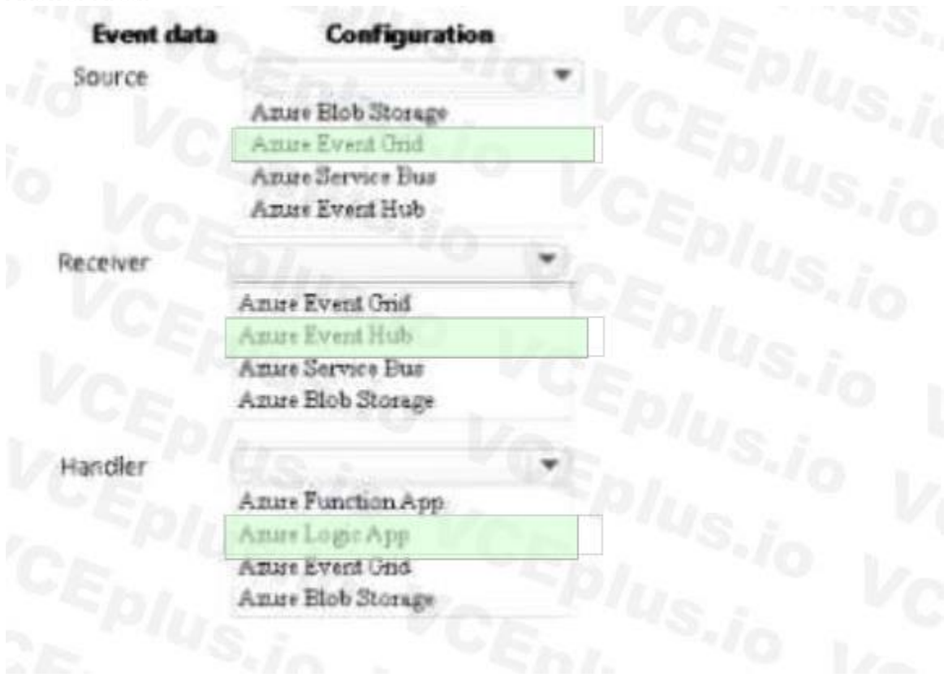
Section:
Explanation:

QUESTION 54
HOTSPOT
You need to implement event routing for retail store location data.
Which configuration should you use?

Hot Area:



Answer Area:



Section:
Explanation:

QUESTION 55
HOTSPOT
You need to implement the delivery service telemetry data

How should you configure the solution?
NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area:

Section:
Explanation:

QUESTION 56
You need to reduce read latency for the retail store solution.
What are two possible ways to achieve the goal? Each correct answer presents a complete solution.
NOTE: Each correct selection is worth one point.

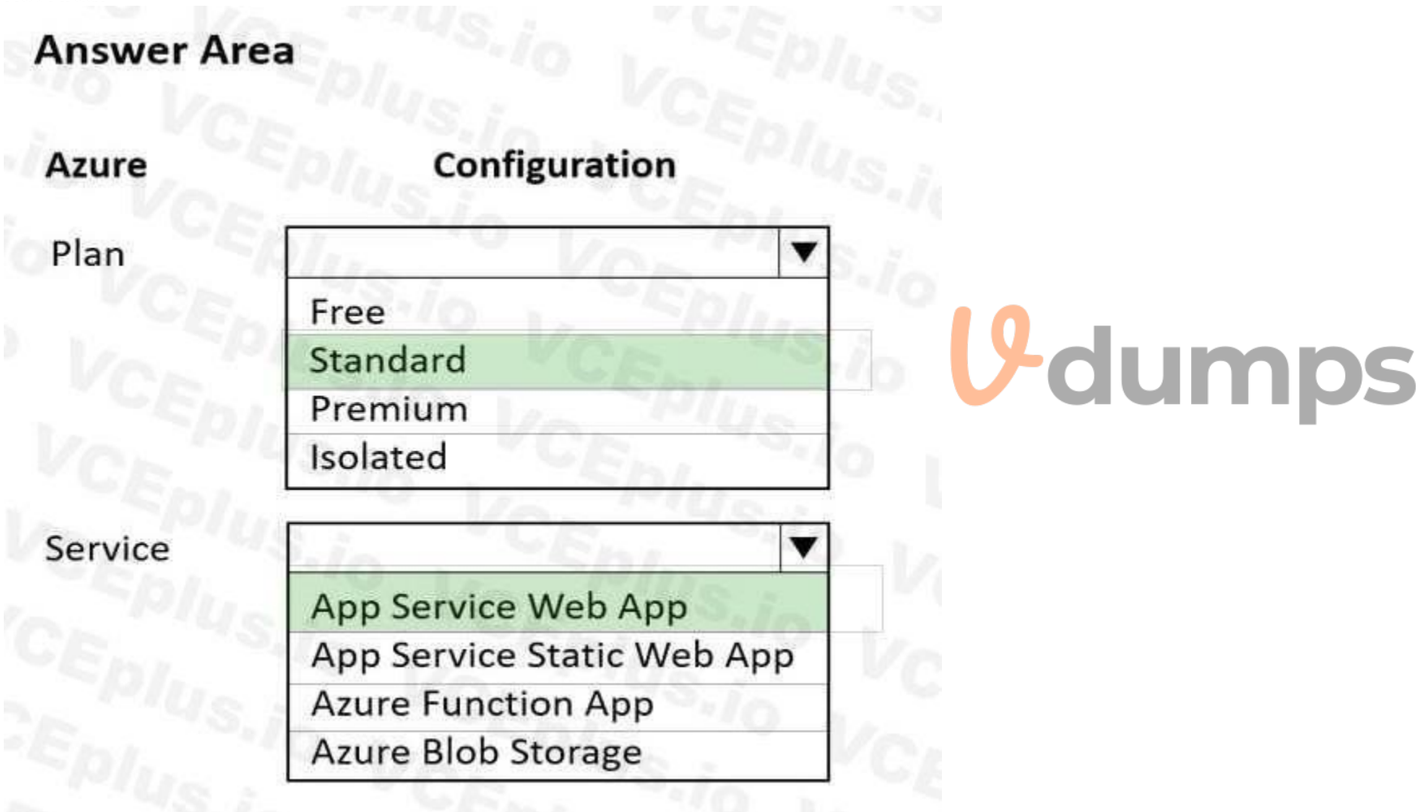
A. Create a new composite index for the store location data queries in Azure Cosmos DB. Modify the queries to support parameterized SQL and update the Azure function app to call the new Queries.
B. Configure Azure Cosmos DB consistency to strong consistency Increase the RUs for the container supporting store location data.

C. Provision an Azure Cosmos OB dedicated gateway, update blob storage to use the new dedicated gateway endpoint.
D. Configure Azure Cosmos DB consistency to session consistency. Cache session tokens in a new Azure Redis cache instance after every write. Update reads to use the session token stored in Azure Redis.
E. Provision an Azure Cosmos DB dedicated gateway Update the Azure Function app connection string to use the new dedicated gateway endpoint.

Correct Answer: C, D
Section:

QUESTION 57
HOTSPOT
You need to implement the corporate website.
How should you configure the solution?

Hot Area:



Answer Area:

Answer Area

Azure	Configuration
Plan	Free **Standard** Premium Isolated
Service	**App Service Web App** App Service Static Web App Azure Function App Azure Blob Storage

Section:
Explanation:

QUESTION 58
You need to test the availability of the corporate website.
Which two test types can you use?

A. Custom testing using the TrackAvailability API method
B. Standard
C. URL Ping
D. Multi-step

Correct Answer: A, B
Section:

QUESTION 59
You develop and deploy an Azure App Service web app named App1. You create a new Azure Key Vault named Vault 1. You import several API keys, passwords, certificates, and cryptographic keys into Vault1.
You need to grant App1 access to Vault1 and automatically rotate credentials Credentials must not be stored in code.
What should you do?

A. Enable App Service authentication for App1. Assign a custom RBAC role to Vault1.
B. Add a TLS/SSL binding to App1.
C. Assign a managed identity to App1.

D. Upload a self-signed client certificate to Vault1. Update App1 to use the client certificate.

Correct Answer: D
Section:

QUESTION 60
You a web application that provides access to legal documents that are stored on Azure Blob Storage with version level immutability policies. Documents are protected with both time-based policies legal hold policies. All time,Ä"based retention policies have AllowProtectedAppendWrites property enabled.
You have a requirement to prevent the user from attempting to perform operations that would fail only a legal is in effect and when all other are expired.
You reed to meet the requirement.
Which two operations you prevent?

A. overwriting existing
B. adding data to documents
C. deleting documents
D. creating document

Correct Answer: A, C
Section:

QUESTION 61
You are developing an Azure Durable Function to manage an online ordering process.
The process must call an external API to gather product discount information.
You need to implement Azure Durable Function.
Which Azure Durable Function types should you use? Each correct answer presents part of the solution
NOTE: Each correct selection is worth ore point

A. Orchestrator
B. Entity
C. Activity
D. Client

Correct Answer: A, B
Section:
Explanation:
https://learn.microsoft.com/en-us/azure/azure-functions/durable/durable-functions-types-featuresoverview

QUESTION 62
You develop a Python application for image rendering that uses GPU resources to optimize rendering processes. You deploy the application to an Azure Container Instances (ACI) Linux container.
The application requires a secret value to be passed when the container is started. The value must only be accessed from within the container.
You need to pass the secret value.
What are two possible ways to achieve this goal? Each correct answer presents a complete solution.
NOTE: Each correct selection is worth one point.

A. Create an environment variable Set the secureValue property to the secret value.
B. Add the secret value to the container image. Use a managed identity.
C. Add the secret value to the application code Set the container startup command.

D. Add the secret value to an Azure Blob storage account. Generate a SAS token.
E. Mount a secret volume containing the secret value in a secrets file.

Correct Answer: A, E
Section:
Explanation:
Objects with secure values are intended to hold sensitive information like passwords or keys for your application. Using secure values for environment variables is both safer and more flexible than including it in your container's image.
Another option is to use secret volumes, described in Mount a secret volume in Azure Container Instances..... https://docs.microsoft.com/en-us/azure/containerinstances/container-instances-environment-variables

QUESTION 63
You develop and deploy a web app to Azure App Service. The Azure App Service uses a Basic plan in a region.
Users report that the web app is responding must capture the complete call stack to help performance issues in code. Call stack data must be correlated across app instances. You must minimize cost and impact to users on the web app.
You need to capture the telemetry.
Which three actions should you perform? Each answer presents part Of the solution
NOTE: Each correct selection is worth point

A. Enable Application Insights site extensions.
B. Enable Profiler.
C. Restart all apps in the App Service plan.
D. Enable Snapshot debugger.
E. Enable remote debugging.
F. Enable the Always On setting for the app service.
G. Upgrade the Azure App Service plan to Premium

Correct Answer: C, D, F
Section:

QUESTION 64
You are developing several microservices to deploy to a Azure Service cluster. The microservices manage data stored in Azure Cosmos DB and Azure Blob storage. The data is secured by using customer-managed keys stored in Aue Key Vault.
You must automate key rotation for all Key Vault keys and allow for manual key rotation. Keys must rotate every three months. Notifications Of expiring keys must be sent before key expiry.
You need to configure key rotation and enable key expiry notifications.
Which two actions should you perform? Each correct answer presents part Of solution.
NOTE: Each correct selection is worth

A. Create and configure a new Azure Event Grid instance.
B. Create configure a key rotation policy during key creation
C. Create and assign an Azure Key Vault access
D. Configure Azure Key Vault

Correct Answer: B, D
Section:
Explanation:
https://learn.microsoft.com/en-us/azure/key-vault/keys/how-to-configure-key-rotation

QUESTION 65

You develop Azure Web Apps for a commercial diving company. Regulations require that all divers fill out a health questionnaire every 15 days after each diving job starts.
You need to configure the Azure Web Apps so that the instance count scales up when divers are filling out the questionnaire and scales down after they are complete.
You need to configure autoscaling.
What are two possible autoscaling configurations to achieve this goal? Each correct answer presents a complete solution.
NOTE: Each correct selection is worth one point.

A. Predictive autoscaling
B. CPU usage-based autoscaling
C. Recurrence profile
D. Fixed date profile

Correct Answer: A, D
Section:

QUESTION 66
You are developing a web application that uses the Microsoft identity platform to authenticate users and resources, The web application calls several REST APIs.
The APIs require an access token from the Microsoft identity platform.
You need to request a token.
Which three properties should you use? Each correct answer presents part of the solution.
NOTE: Each correct selection is worth one point.

A. Application name
B. Application secret
C. Application ID
D. Supported account type
E. Redirect URI/URL

Correct Answer: A, B, C
Section:

QUESTION 67
You are developing an Azure App Service web app.
The web app must securely store session information in Azure Redis Cache.
You need to connect the web app to Azure Redis Cache.
Which three Azure Redis Cache properties should you use? Each correct answer presents part of the solution.
Each correct selection is worth one point.

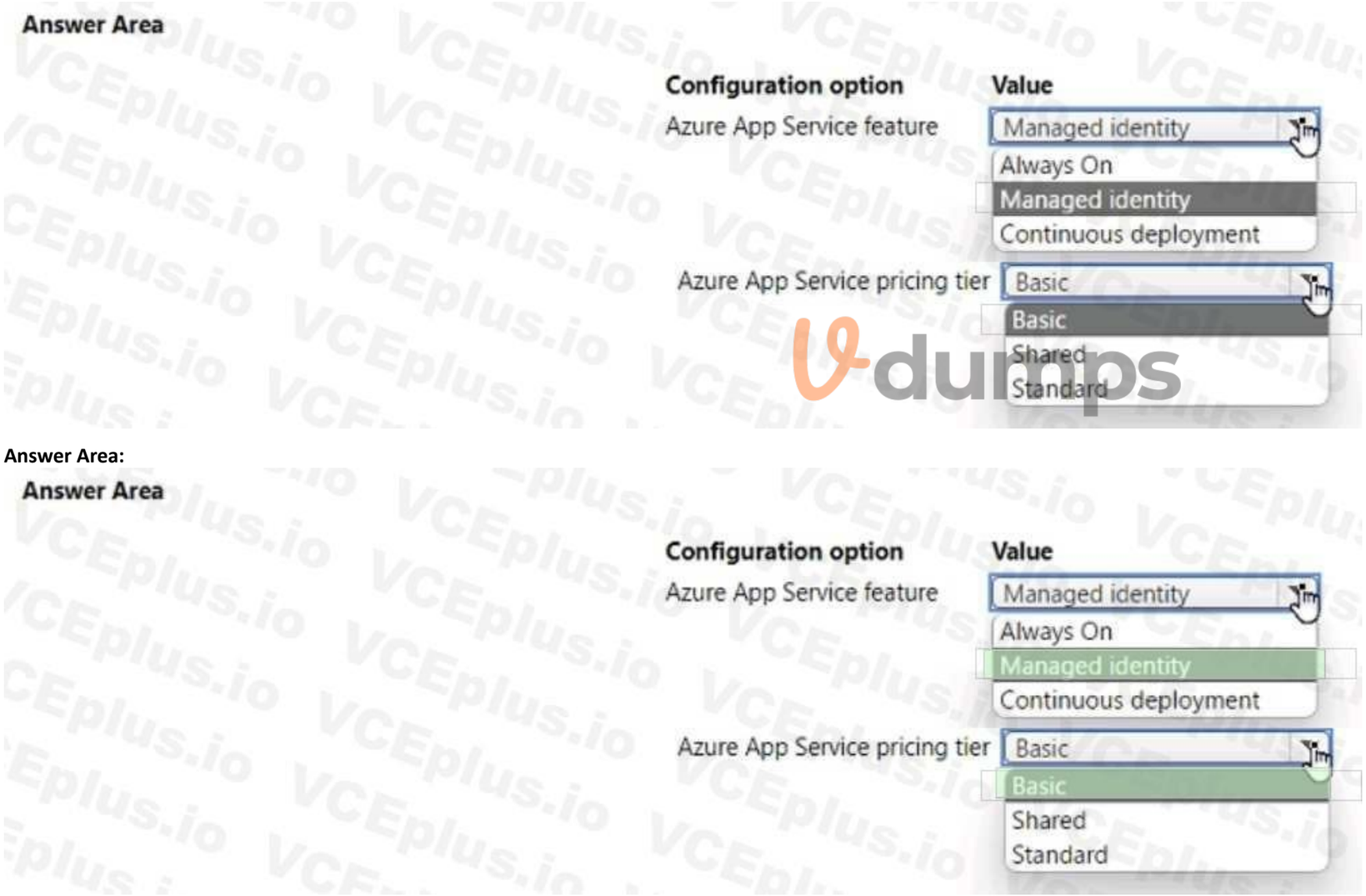
A. SSL port
B. Subscription name
C. Location
D. Host name
E. Access key
F. Subscription id

Correct Answer: A, C, D
Section:
Explanation:

https://learn.microsoft.com/en-us/azure/azure-cache-for-redis/cache-web-app-howto

QUESTION 68
HOTSPOT
You have an App Service plan named aspl based on the Free pricing tier.
You plan to use aspl to implement an Azure Function app with a queue trigger. Your solution must minimize cost.
You need to identify the configuration options that will meet the requirements.
Which value should you configure? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:

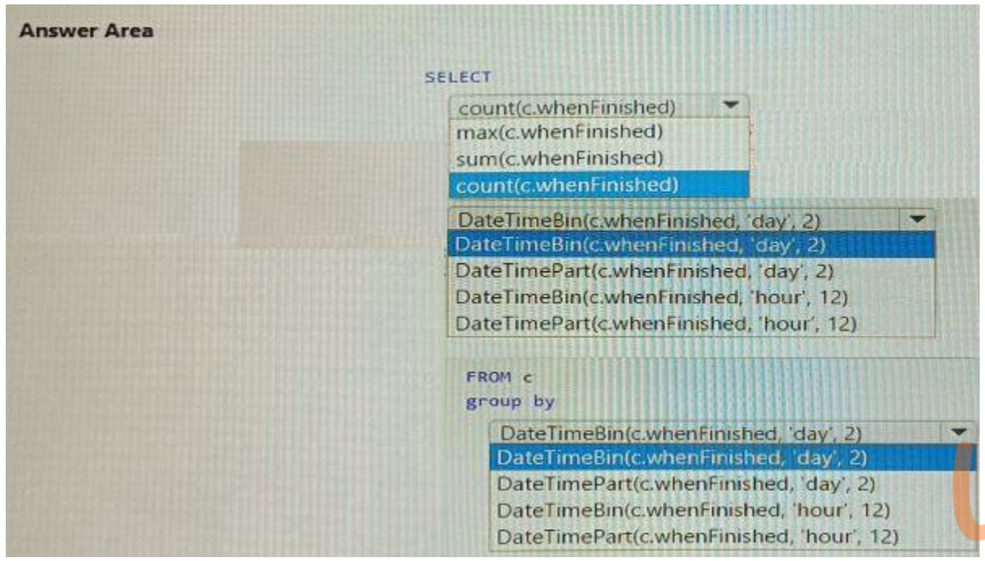


Answer Area:

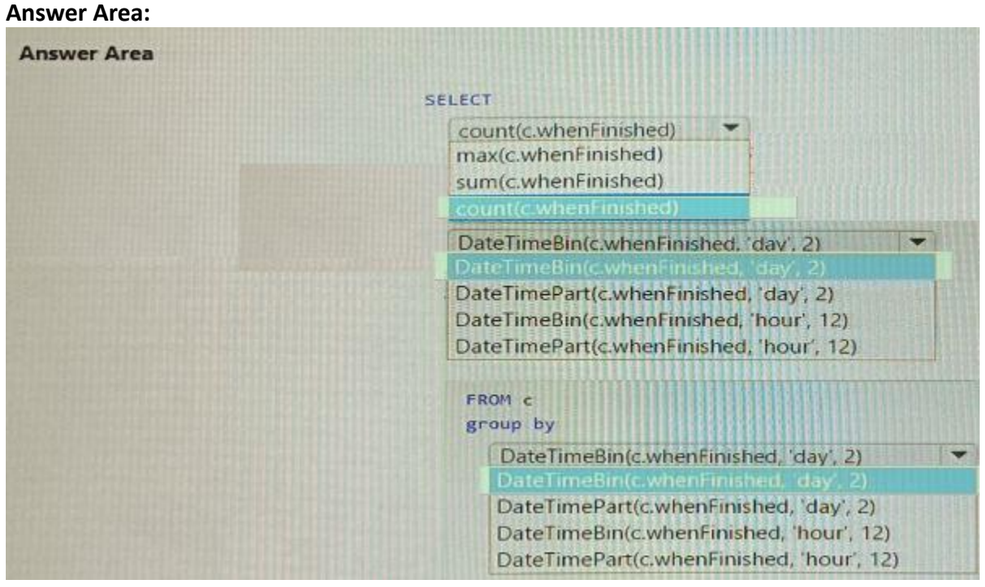
Section:
Explanation:

QUESTION 69
HOTSPOT
You develop an application that sells AI generated images based on user input. You recently started a marketing campaign that displays unique ads every second day.
Sales data is stored in Azure Cosmos DB with the date of each sale being stored in a property named 'whenFinished'.
The marketing department requires a view that shows the number of sales for each unique ad.
You need to implement the query for the view.
How should you complete the query? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:

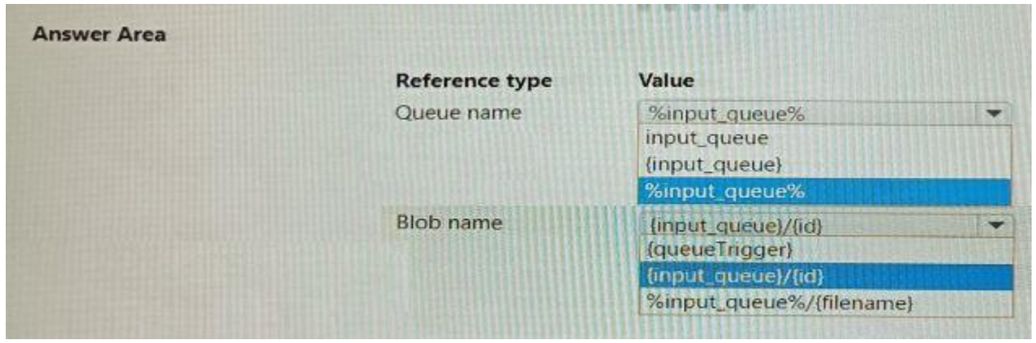


Section:
Explanation:

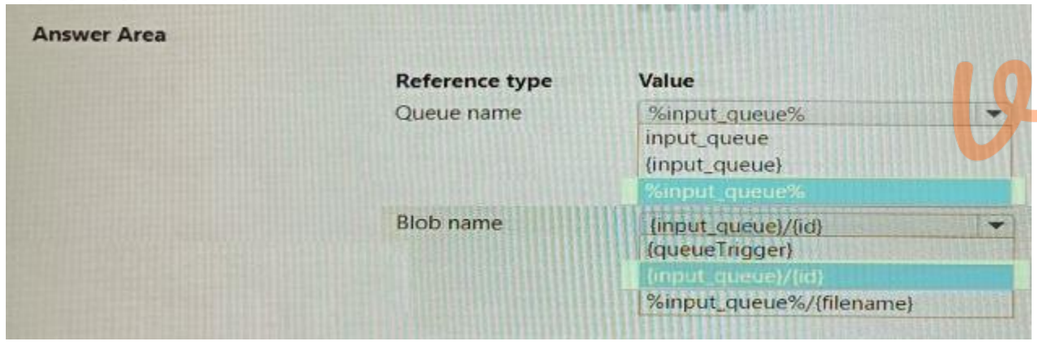
QUESTION 70

HOTSPOT
You plan to implement an Azure Functions app.
The Azure Functions app has the following requirements:
* Must be triggered by a message placed in an Azure Storage queue.
* Must use the queue name set by an app setting named input-queue.
* Must create an Azure Blob Storage named the same as the content of the message.
You need to identify how to reference the queue and blob name in the function. Just file of the Azure Functions app.
How should you reference the names? To answer, select the appropriate values in the answer area. NOTE: Each correct selection is worth one point.

Hot Area:



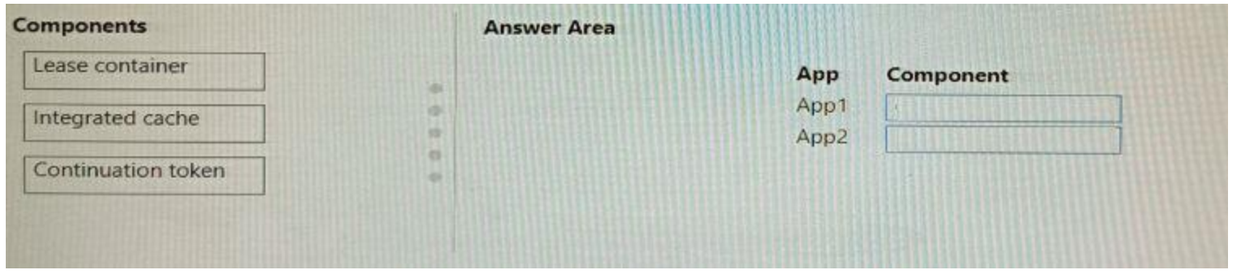
Answer Area:



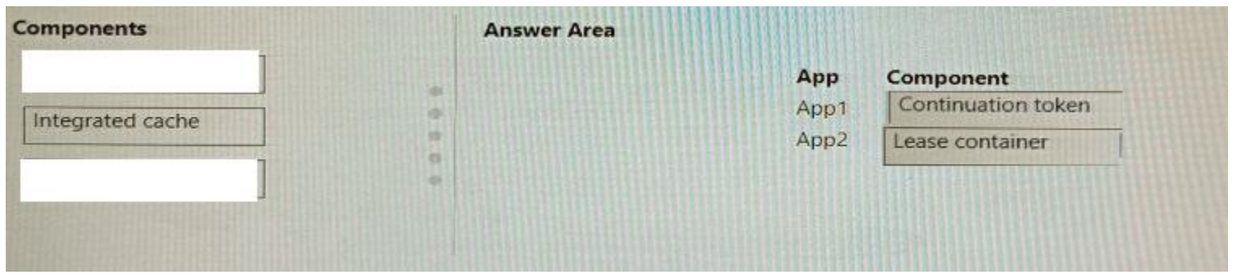
Section:
Explanation:

QUESTION 71
DRAG DROP
You have an Azure Cosmos DB for NoSQL account.
You plan to develop two apps named App1 and App2 that will use the change feed functionality to track changes to containers.
App1 will use the pull model and App2 will use the push model.
You need to choose the method to track the most recently processed change in App1 and App2.
Which component should you use? To answer, drag the appropriate components to the correct apps. Each component 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.
NOTE: Each correct selection is worth one point.

Select and Place:



Correct Answer:



Section:
Explanation:

QUESTION 72
You are developing several Azure API Management (APIM) hosted APIs.
You must transform the APIs to hide private backend information and obscure the technology stack used to implement the backend processing.
You need to protect all APIs.
What should you do?

A. Configure and apply a new inbound policy scoped to a product.
B. Configure and apply a new outbound policy scoped to the operation.
C. Configure and apply a new outbound policy scoped to global.
D. Configure and apply a new backend policy scoped to global.

Correct Answer: A
Section:

QUESTION 73
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 question, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.
You are developing a solution that will be deployed to an Azure Kubernetes Service (AKS) cluster. The solution will include a custom VNet, Azure Container Registry images, and an Azure Storage account.
The solution must allow dynamic creation and management of all Azure resources within the AKS cluster.
You need to configure an AKS cluster for use with the Azure APIs.
Solution: Enable the Azure Policy Add-on for Kubernetes to connect the Azure Policy service to the GateKeeper admission controller for the AKS cluster. Apply a built-in policy to the cluster.
Does the solution meet the goal?

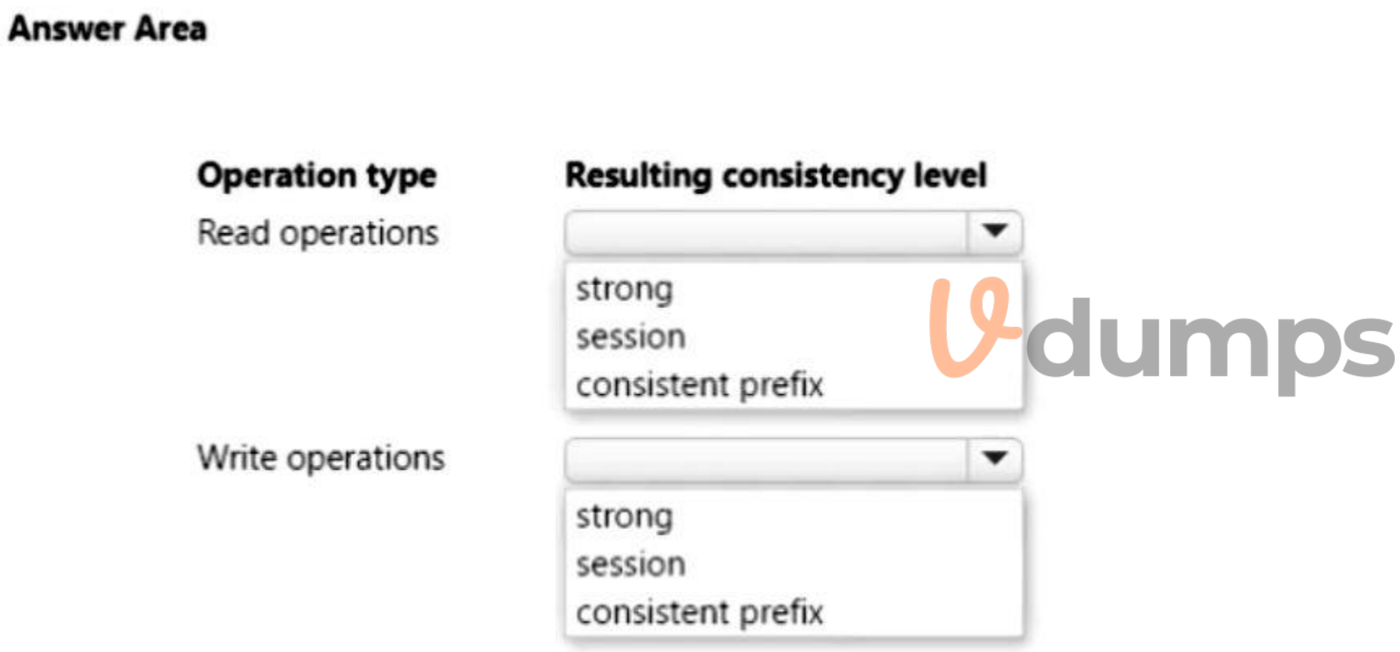
A. Yes
B. No

Correct Answer: B

Section:
Explanation:
Instead create an AKS cluster that supports network policy. Create and apply a network to allow traffic only from within a defined namespace
https://docs.microsoft.com/en-us/azure/aks/use-network-policies

QUESTION 74
HOTSPOT
You provisioned an Azure Cosmos DB for NoSQL account named account1 with the default consistency level.
You plan to configure the consistency level on a per request basis The level needs to be set for consistent prefix for read and write operations to account1.
You need to identify the resulting consistency level for read and write operations.
Which levels should you configure? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:

Answer Area

Operation type	Resulting consistency level
Read operations	strong session consistent prefix
Write operations	strong session consistent prefix

Section:
Explanation:

QUESTION 75
You are developing several Azure API Management (APIM) hosted APIs.
You must inspect request processing of the APIs in APIM. Requests to APIM by using a REST client must also be included. The request inspection must include the following information:
* requests APIM sent to the API backend and the response it received
* policies applied to the response before sending back to the caller
* errors that occurred during the processing of the request and the policies applied to the errors
* original request APIM received from the caller and the policies applied to the request
You need to inspect the APIs.
Which three actions should you do? Each correct answer presents part of the solution.
NOTE: Each correct selection is worth one point.

A. Enable the Allow tracing setting for the subscription used to inspect the API.
B. Add the Ocp-Apim-Trace header value to the API call with a value set to true
C. Add the Ocp-Apim-Subscription-Key header value to the key for a subscription that allows access to the API.
D. Create and configure a custom policy. Apply the policy to the outbound policy section with an API scope.
E. Create and configure a custom policy. Apply the policy to the inbound policy section with a global scope.

Correct Answer: A, B, C
Section:
Explanation:
The correct answer is A, B, and C. To inspect request processing of the APIs in APIM, you need to do the following three actions:
Enable the Allow tracing setting for the subscription used to inspect the API. This setting allows you to trace request processing in APIM using the test console, a REST client, or a client app. You can enable this setting in the

portal by selecting Subscriptions and then selecting the subscription you want to use for debugging1.
Add the Ocp-Apim-Trace header value to the API call with a value set to true. This header triggers tracing when making requests to APIM using a REST client or a client app. You also need to add the Ocp-Apim-Subscription-Key header value to the key for a subscription that allows access to the API1.
Add the Ocp-Apim-Subscription-Key header value to the key for a subscription that allows access to the API. This header authenticates your request and grants you access to the API. You can find the key for your subscription in the portal by selecting Subscriptions and then selecting Show/hide keys1.
You do not need to create and configure a custom policy for tracing request processing. The trace policy is used to add a custom trace into the request tracing output, Application Insights telemetries, and/or resource logs2. It is not required for inspecting the APIs.

QUESTION 76
DRAG DROP
You are developing several microservices named service
* The microservices must persist data to storage.
* serviceA must persist data only visible to the current container and the storage must be restricted to the amount of disk space available in the container
* servtceB must persist data for the lifetime of the replica and allow multiple containers in the replica to mount the same storage location.
* serviceC must persist data beyond the lifetime of the replica while allowing multiple containers to access the storage and enable per object permissions.
You need to configure storage for each microservice.

Select and Place:

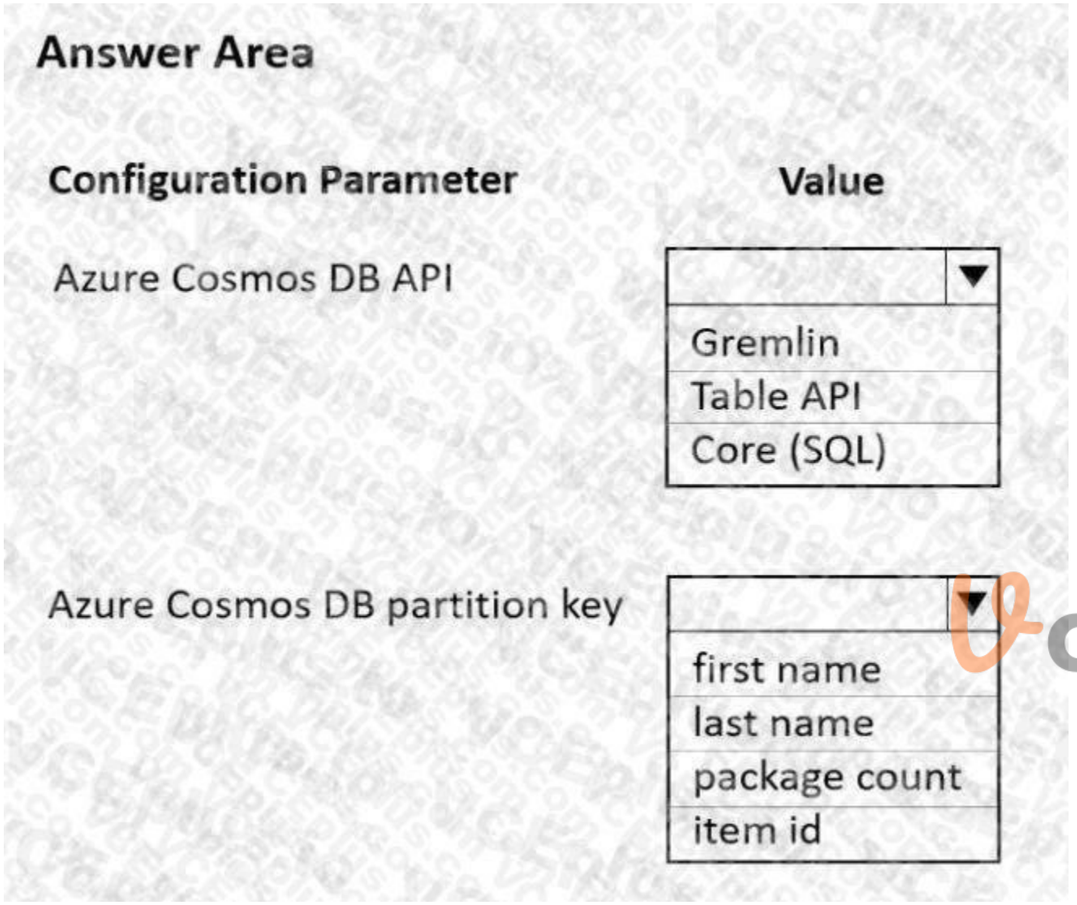
Correct Answer:

Section:
Explanation:

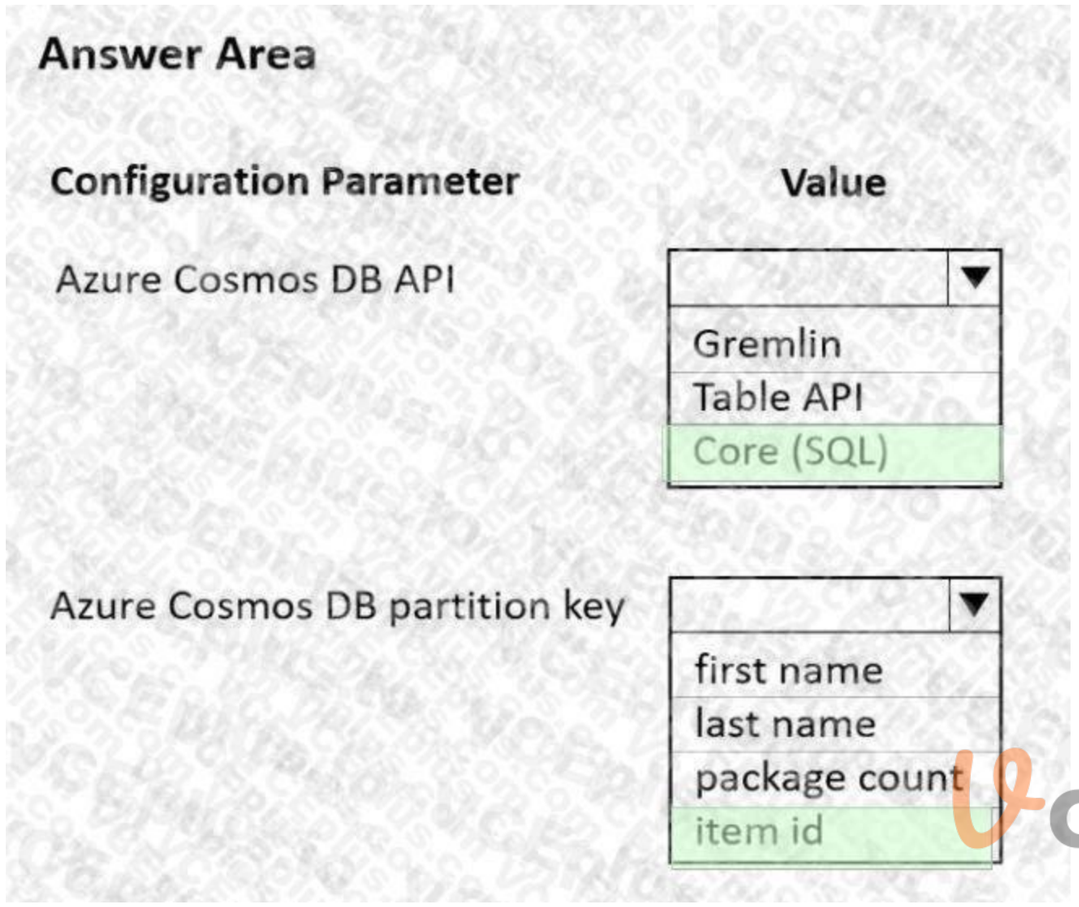
QUESTION 77
HOTSPOT
You are developing an application to collect the following telemetry data for delivery drivers: first name, last name, package count, item id, and current location coordinates. The app will store the data in Azure Cosmos DB.

You need to configure Azure Cosmos DB to query the data.
Which values should you use? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:



Section:
Explanation:
Box 1: Core (SQL)
Core(SQL) API stores data in document format. It offers the best end-to-end experience as we have full control over the interface, service, and the SDK client libraries. SQL API supports analytics and offers performance isolation between operational and analytical workloads.
Box 2: item id item id is a unique identifier and is suitable for the partition key. Reference:
https://docs.microsoft.com/en-us/azure/cosmos-db/choose-api https://docs.microsoft.com/en-us/azure/cosmos-db/partitioning-overview

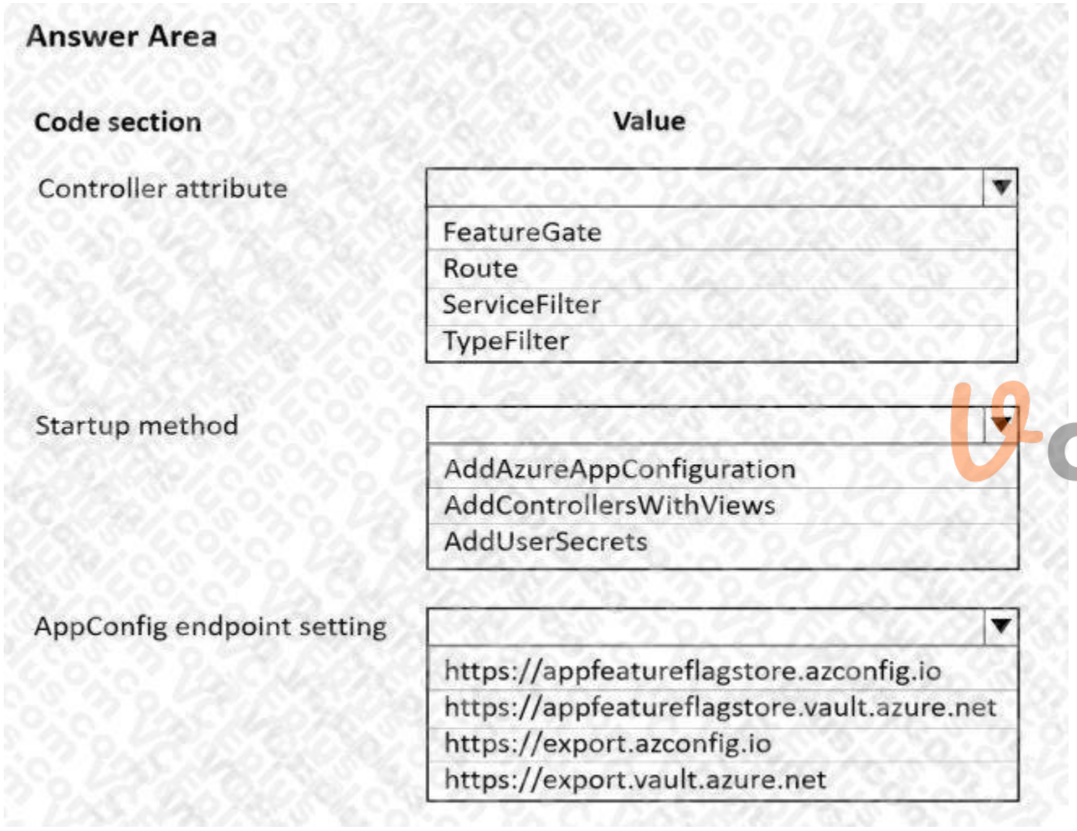
QUESTION 78
HOTSPOT
You are developing an ASP.NET Core app that includes feature flags which are managed by Azure App Configuration. You create an Azure App Configuration store named AppFeatureflagStore as shown in the exhibit:

You must be able to use the feature in the app by using the following markup:

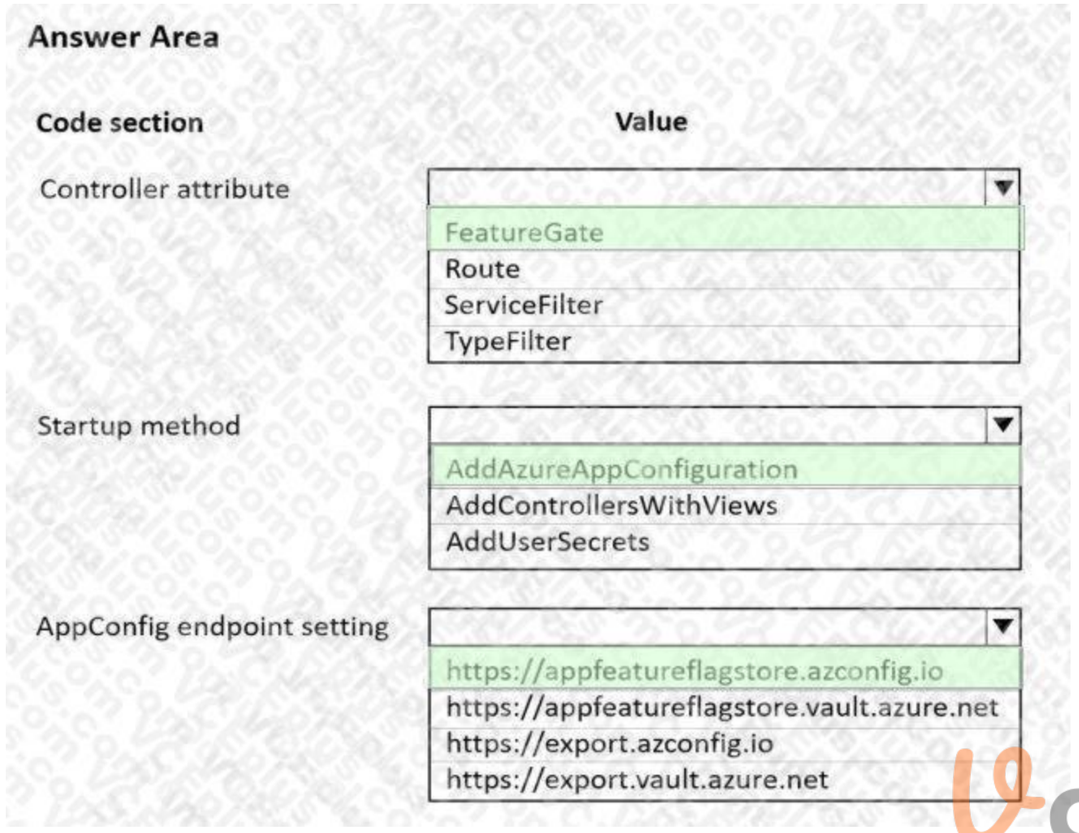
```
<feature name="Export">
  <li class="nav-item">
    <a class="nav-link text-dark" asp-area="" asp-controller="Home" asp-action="Export">Export Data</a>
  </li>
</feature>
```

You need to update the app to use the feature flag.
Which values should you use? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:



Section:

Explanation:

Box 1: FeatureGate

You can use the FeatureGate attribute to control whether a whole controller class or a specific action is enabled.

Box 2: AddAzureAppConfiguration

The extension method AddAzureAppConfiguration is used to add the Azure App Configuration Provider.

Box 3: https://appfeatureflagstore.azconfig.io

You need to request the access token with resource=https://.azconfig.io Reference:

https://docs.microsoft.com/en-us/azure/azure-app-configuration/use-feature-flags-dotnet-core

https://csharp.christiannagel.com/2020/05/19/azureappconfiguration/ https://stackoverflow.com/questions/61899063/how-touse-azure-app-configuration-rest-api

QUESTION 79

HOTSPOT

You have a single page application (SPA) web application that manages information based on data returned by Microsoft Graph from another company's Azure Active Directory (Azure AD) instance.

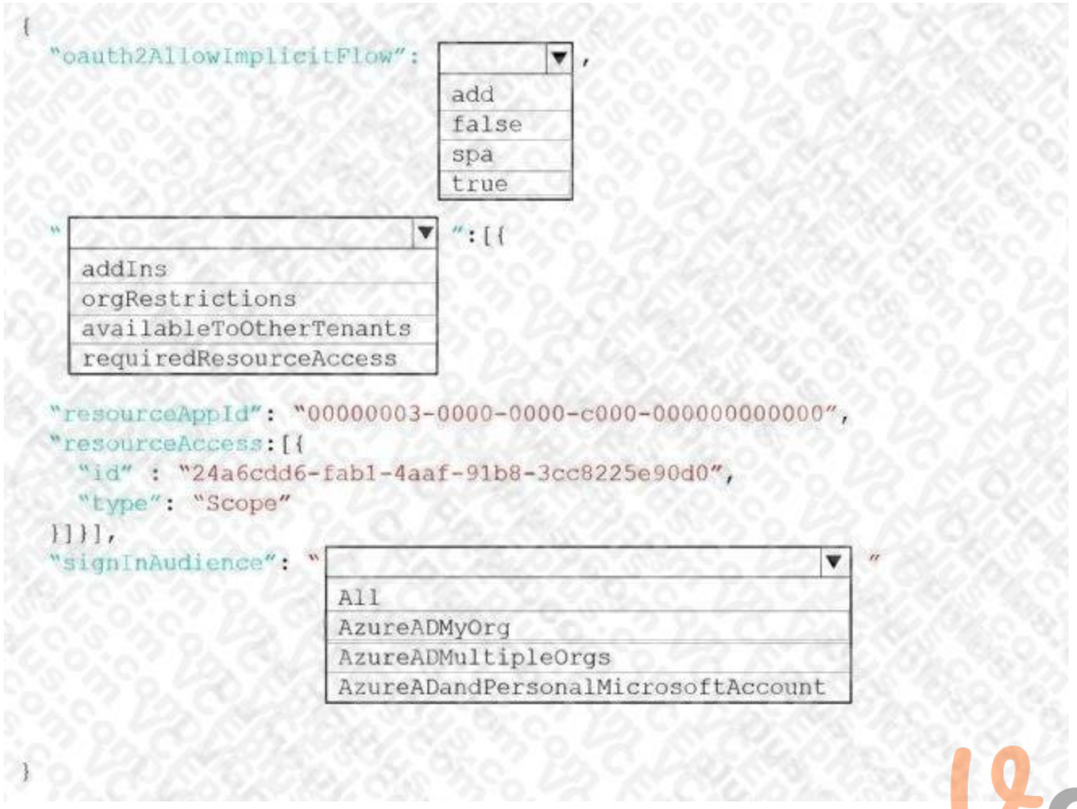
Users must be able to authenticate and access Microsoft Graph by using their own company's Azure AD instance.

You need to configure the application manifest for the app registration.

How should you complete the manifest? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:

Section:
Explanation:
Box 1: true
The oauth2AllowImplicitFlow attribute Specifies whether this web app can request OAuth2.0 implicit flow access tokens. The default is false. This flag is used for browser-based apps, like JavaScript singlepage apps.
In implicit flow, the app receives tokens directly from the Azure Active Directory (Azure AD) authorize endpoint, without any server-to-server exchange. All authentication logic and session handling is done entirely in the JavaScript client with either a page redirect or a pop-up box.
Box 2: requiredResourceAccess
With dynamic consent, requiredResourceAccess drives the admin consent experience and the user consent experience for users who are using static consent. However, this parameter doesn't drive the user consent experience for the general case. resourceAppId is the unique identifier for the resource that the app requires access to. This value should be equal to the appId declared on the target resource app. resourceAccess is an array that lists the OAuth2.0 permission scopes and app roles that the app requires from the specified resource. Contains the id and type values of the specified resources.
Example:
"requiredResourceAccess": [
{
"resourceAppId": "00000002-0000-0000-c000-000000000000",
"resourceAccess": [
{
"id": "311a71cc-e848-46a1-bdf8-97ff7156d8e6",
"type": "Scope"
}
]
}],
Incorrect Answers:
The legacy attribute availableToOtherTenants is no longer supported.
The addIns attribute defines custom behavior that a consuming service can use to call an app in specific contexts. For example, applications that can render file streams may set the addIns property for its "FileHandler" functionality. This parameter will let services like Microsoft 365 call the application in the context of a document the user is working on.

Example:
"addIns": [
{
"id": "968A844F-7A47-430C-9163-07AE7C31D407",
"type":" FileHandler",
"properties": [
{
"key": "version",
"value": "2"
}
]
}],
Box 3: AzureADMyOrg
The signInAudience attribute specifies what Microsoft accounts are supported for the current application. Supported values are: AzureADMyOrg - Users with a Microsoft work or school account in my organization's Azure AD tenant (for example, single tenant)
AzureADMultipleOrgs - Users with a Microsoft work or school account in any organization's Azure AD tenant (for example, multi-tenant)
AzureADandPersonalMicrosoftAccount - Users with a personal Microsoft account, or a work or school account in any organization's Azure AD tenant Reference:
https://docs.microsoft.com/en-us/azure/active-directory/develop/reference-app-manifest https://docs.microsoft.com/enus/azure/active-directory/develop/v2-oauth2-implicit-grant-flow

QUESTION 80
HOTSPOT
You have an Azure API Management instance named API! that uses a managed gateway.
You plan to implement a policy that will apply at a product scope and will set the header of inbound requests to include information about the region hosting the gateway of API1. The policy definition contains the following content.

```
<policies>
    <inbound>
        TARGET1
        <set-header name="x-request-context-data" exists-action="override">
            <value>@(TARGET2.Deployment.Region)</value>
       </set-header>
    </inbound>
</policies>
```

You have the following requirements for the policy definition:
* Ensure that the header contains the information about the region hosting the gateway of API1.
* Ensure the policy applies only after any global level policies are processed first.
You need to complete the policy definition.
Which values should you choose? To answer, select the appropriate options in the answer area.

Hot Area:

Answer Area:

Section:
Explanation:

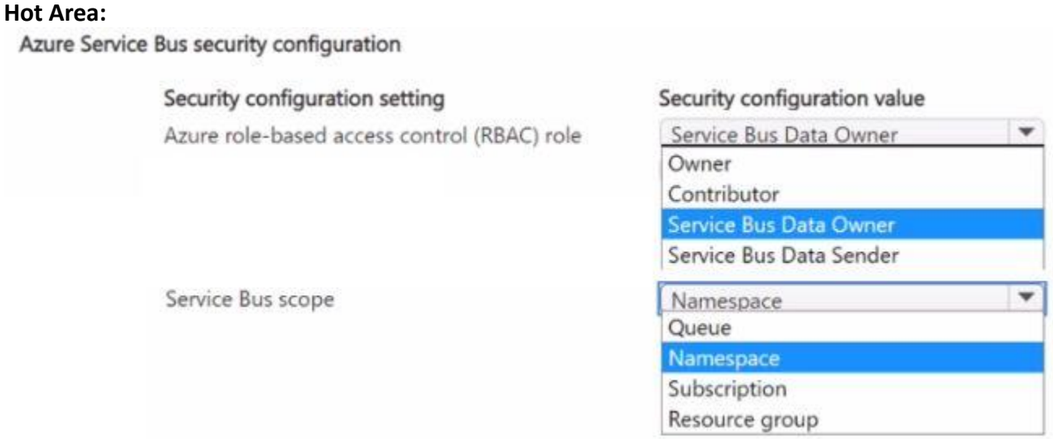
QUESTION 81
You have 100 Azure virtual machines (VMs) with the system-assigned managed identity enabled.
You need to identify the value of the object ID attribute for each of the identities.
Which command should you use?

A. az resource show
B. az ad signed-in-user list-owned-objects
C. az ad user show
D. Get-AzVM

Correct Answer: B
Section:

QUESTION 82
HOTSPOT
You need to resolve the authentication errors for developers.
Which Service Bus security configuration should you use? To answer, select the appropriate options in the answer area.
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:

Azure Service Bus security configuration

Security configuration setting	Security configuration value
Azure role-based access control (RBAC) role	Service Bus Data Owner
Service Bus scope	Namespace

Azure role-based access control (RBAC) role options: Owner, Contributor, Service Bus Data Owner, Service Bus Data Sender

Service Bus scope options: Queue, Namespace, Subscription, Resource group

Section:
Explanation:

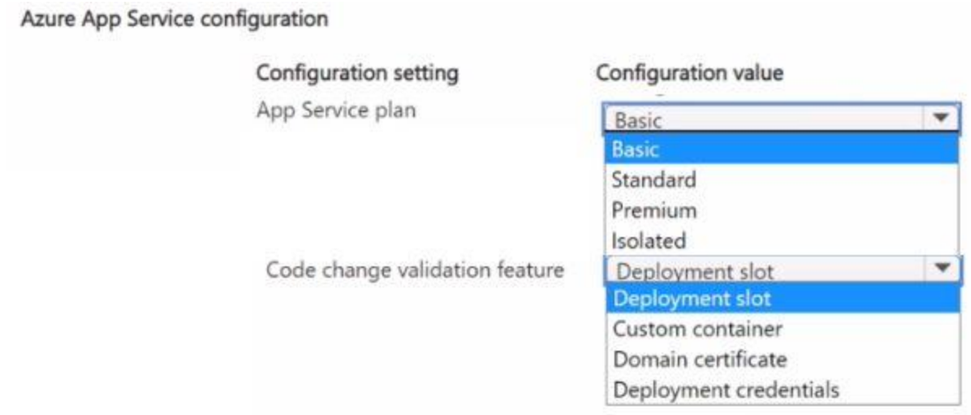
QUESTION 83
You need to secure the corporate website to meet the security requirements.
What should you do?

A. Create an App Service instance with a standard plan. Configure the custom domain with a TLS/SSL certificate.
B. Create an Azure Application Gateway with a Web Application Firewall (WAF). Configure end-to-end TLS encryption and the WAF.
C. Create an Azure Cache for Radis instance. Update the code to support the cache.
D. Create an Azure Content Delivery Network profile and endpoint. Configure the endpoint.

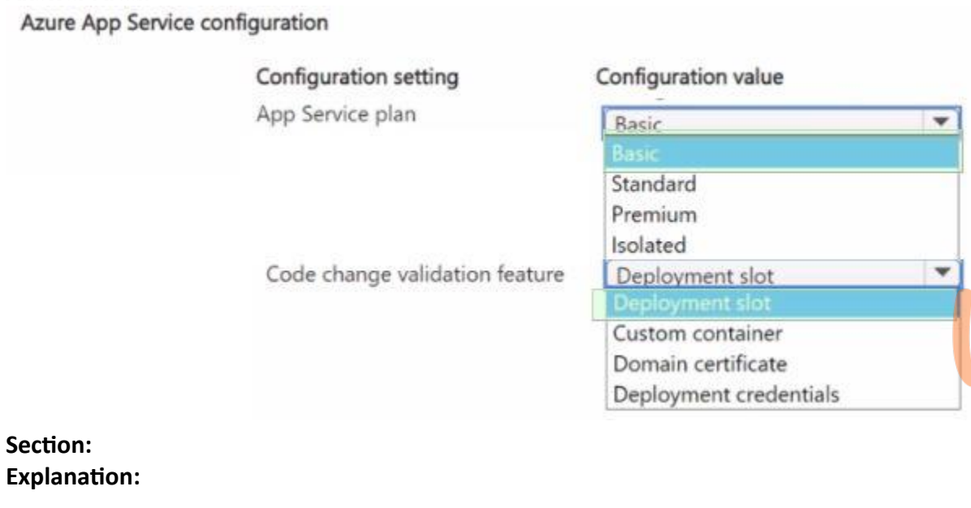
Correct Answer: A
Section:

QUESTION 84
HOTSPOT
You need to configure App Service to support the corporate website migration.
Which configuration should you use? To answer, select the appropriate options in the answer area
NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area:



Section:
Explanation:

QUESTION 85
You need to implement farmer authentication.
Which three actions should you perform? Each correct answer presents part of the solution.
NOTE: Each correct selection is worth one point.

A. Add the shared access signature (SAS) token to the app
B. Create a shared access signature (SAS) token.
C. Register the app in Microsoft Entra ID.
D. Create a user flow.
E. Add the app to the user flow.

Correct Answer: C, D, E
Section: