DIPLOMA IN DATA MANAGEMENT AND ANALYTICS (DDMA)

LEVEL III

CLOUD DATA SOLUTIONS

THURSDAY: 4 December 2025. Morning Paper. **Time Allowed: 2 hours.**

This paper consists of fifty (50) Multiple Choice Questions. Answer ALL questions by indicating the letter (A, B, C or D) that represents the correct answer. Each question is allocated two (2) marks.

1. Which one of the following principles of cloud computing is described as "The cloud tenants only need to choose the specifications of the resources they require and the cloud computing provider will configure and set them up"?
   A. Virtualisation
   B. Elasticity
   C. Automatic resource deployment
   D. Metered billing (2 marks)

2. Which one of the following statements is a **KEY** advantage of using a Software as a Service (SaaS) provider like Google Docs?
   A. Users can fully customise the software environment
   B. There is no need to worry about installation
   C. Users have complete control over hardware configurations
   D. It requires advanced technical expertise to use (2 marks)

3. Which one of the following statements is a limitation of Platform as a Service (PaaS) providers like Google App Engine?
   A. Users are restricted to specific programming languages
   B. It does not support database or file storage services
   C. It requires manual hardware setup
   D. Users have full control over the software environment (2 marks)

4. Which one of the following factors has motivated the recent growth of Computing as a Service, based on the passage?
   A. The difficulty of dynamically scaling and deploying new complex services without maintaining a shared resource pool and specific hardware assets
   B. The promise of reduced capital and operating expenses, combined with the ease of dynamically scaling and deploying new services
   C. The rapid transformation of organisations from single system environments to scenarios of dynamic resource abundance and a wide range of choice
   D. The implementation of a completely dedicated, on-premise compute infrastructure that requires annual capital investments in hardware (2 marks)

5. Which one of the following statements is the **MAIN** function of platform virtualisation in cloud computing server management?
   A. To avoid resource conflicts, it limits servers to a single operating system
   B. Each virtual server instance's hardware resources must be manually allocated
   C. It removes the requirement for a hypervisor to control the resources of virtual machines
   D. It allows the operating system to run independently by abstracting the physical hardware (2 marks)

6. In cloud computing environments, how does platform virtualisation improve server utilisation?
   A. It keeps server utilisation between 5 and 10% to guarantee stability and avoid overuse
   B. It allows several virtual servers to operate efficiently on a single physical server
   C. For performance, it gives each virtual server its own physical hardware
   D. It lowers the number of virtual servers to keep utilisation rates low (2 marks)

7. The hypervisor is central to platform virtualisation. How does it facilitate resource management in a virtualised cloud environment?
   A. It manages physical hardware directly without supporting virtual operating systems
   B. It limits virtual machines to one operating system to maintain hardware compatibility
   C. It demands manual resource allocation for each virtual machine by the user
   D. It distributes system resources across multiple virtual operating systems (2 marks)

8. Platform virtualisation streamlines server management in cloud computing. How does it enable rapid server deployment and teardown?
   A. By simplifying loading or removing virtual machine images quickly
   B. It requires manual operating system installation for each virtual server instance
   C. By restricting virtual machine teardown to maintain long-term server availability
   D. It complicates deployment with mandatory configurations for each virtual instance (2 marks)

9. How does Amazon Elastic Compute Cloud (EC2) utilise platform virtualisation to provide computing resources?
   A. It eliminates the need for virtual computing environments to have separate network and security configurations
   B. Each virtual server must have its hardware manually configured to ensure stability and optimal performance
   C. By using virtual environments with an operating system that can be customised it provides resizable compute capacity
   D. To make resource allocation and management easier, it limits users to a single operating system (2 marks)

10. What part does a machine image play in setting up a server environment for cloud computing?
   A. It prevents users from customising software and limits them to particular hardware configurations
   B. It serves as a snapshot of an operating system with pre-installed software for virtual environments
   C. Every time a virtual server instance is launched, operating systems must be manually installed
   D. It offers cloud instances with short-term hardware access without an operating system (2 marks)

11. Which one of the following statements is the **MAIN** purpose of an elastic IP address in the management of cloud computing servers?
   A. The IP must be manually mapped to a virtual machine instance by a network administrator
   B. In cloud environments, it limits IP address changes to avoid DNS propagation delays
   C. It enables DNS-delayed programmatic mapping of a static IP address to any virtual machine
   D. For regional uniformity, it restricts IP address assignments to designated availability zones (2 marks)

12. Which of the following roles is played by vertical availability in solving performance issues in cloud computing environments?
   A. It enhances resilience by scaling server resources to handle high traffic in a localised region
   B. It limits server resources to a single region to maintain low latency for all users globally
   C. To manage traffic spikes in particular areas, users must manually configure it
   D. It restricts service access to specific data centers to ensure consistent regional performance (2 marks)

13. The characteristics of cloud computing described as the ability for a single instance of services to serve multiple clients or tenants by allowing numerous clients to subscribe to the same cloud computing capabilities while retaining privacy and security over their sensitive data is called _____.
   A. replication
   B. multitenancy
   C. elasticity
   D. availability (2 marks)

14. In contrast to traditional file hosting which depends on a single server, how does cloud storage achieve consistency in performance across the globe?
   A. By reducing the size of the data using compression algorithms
   B. Through the use of file-based APIs such as FTP and NFS
   C. By employing information dispersal algorithms to reconstruct data
   D. Through the use of CDNs and file distribution across several servers (2 marks)

15. For effective data access, what is the **MAIN** access method that big cloud storage providers like Microsoft Azure and Amazon S3 use?
   A. File-based APIs for data transfer, like FTP and NFS
   B. Algorithms for data reconstruction for safe data recovery
   C. Web-Service APIs that use HTTP and the REST architecture
   D. Compression methods to shorten the time it takes to access data (2 marks)

16. How do cloud storage companies minimise the resources needed to store massive volumes of data while still achieving a favourable cost-to-storage ratio?
A. Through the use of de-duplication and compression algorithms
B. By sending information to content delivery networks around the world
C. By storing data across several servers via replication
D. By putting REST APIs into practice for effective data access (2 marks)

17. Which of the following statements is a primary challenge an organisation faces when integrating cloud storage into its existing IT infrastructure and workflows for efficient data management?
A. Making sure that data is highly reliable across several servers
B. Adapting to different file access protocols used by cloud storage
C. Reducing latency for real-time transaction processing
D. Implementing data compression for cost efficiency (2 marks)

18. Which of the following statements explains why mature organisations face greater challenges than younger ones when integrating cloud storage into their existing file storage workflows?
A. They rely on outdated REST-based APIs for data access
B. Their data is stored in geographically distant locations
C. They lack access to scalable cloud storage solutions
D. Their complex workflows require significant resources (2 marks)

19. Which one of the following factors complicates the integration of cloud storage for organisations using services from major providers like Amazon or Microsoft Azure?
A. Data is compressed, reducing compatibility with servers
B. Providers rely on block protocol access for efficiency
C. Each provider uses a unique set of APIs for operations
D. Providers limit scalability for smaller organisations (2 marks)

20. Given the developments in AI-driven optimisations, what qualifies Azure Storage for worldwide distribution and resilience in 2025?
A. Without quotas, it restricts accounts to 250 per region
B. All data transfers require shipping devices
C. For legacy compatibility, it only makes use of standard endpoints
D. Zones of availability with separate power sources are supported (2 marks)

21. Which one of the following statements explain why portability is important when switching to a cloud-based database system for companies that still use traditional relational databases?
A. It makes moving data to the cloud system simple
B. It guarantees multi-regional automatic replication
C. For scalability, it supports sophisticated join queries
D. It improves compatibility with programming environments (2 marks)

22. Why would applications needing high scalability choose a NoSQL database in cloud computing over a relational database?
A. Complex transactions, such as join queries, are supported
B. It adapts automatically to certain traffic volumes
C. It limits access to data to particular programming languages
D. It guarantees that data can be transferred between cloud providers (2 marks)

23. Which one of the following difficulties might occur when applications that do not need a lot of data replication use a high-replication cloud database?
A. It makes the database less transferable between providers
B. It restricts access to particular programming languages
C. The performance of the application is adversely affected
D. It makes join query operations more complex (2 marks)

24. In what ways do large providers of cloud services such as Amazon and Azure, use economies of scale to improve cloud security for small to medium businesses (SMBs)?
A. By restricting access to data to particular geographical areas
B. For flexibility, by utilising decentralised data storage
C. By providing superior security measures at a lower cost
D. By limiting logging to only manual procedures (2 marks)

25. Which one of the following major risks related to cloud computing's privileged user access should businesses consider before implementing cloud services?
    A. It only uses robust username/password authentication
    B. It restricts the replication of data between availability zones
    C. All user activities necessitate intricate logging
    D. It raises the possibility of insiders disclosing data (2 marks)

26. Which one of the following statements **ACCURATELY** describes the core function and common alias for Software as a Service (SaaS)?
    A. It gives clients the ability to use software applications remotely via an internet web browser and is commonly known as "software on demand"
    B. It allows clients to develop and publish customised applications in a hosted environment, and is commonly known as "infrastructure on demand"
    C. It provides the framework for agile software development and testing, and is commonly known as "software on demand"
    D. It allows clients to remotely use IT hardware and resources on a 'pay-as-you-go' basis, and is commonly known as "hardware as a service" (2 marks)

27. Which one of the following features makes cloud computing a model that allows users to access configurable computing resources with little management work?
    A. Users must oversee intricate processes
    B. It limits services to only one kind of resource
    C. It requires users to have physical hardware at their locations
    D. It enables on-demand access with provider management (2 marks)

28. Azure AD is described as a robust, secure and multitenant directory service. What function in the cloud does Azure AD primarily provide?
    A. Virtual machine compute power and network configuration
    B. Full replacement of on-premises file and print services
    C. Identity and access management in the cloud
    D. Software as a Service (SaaS) application development (2 marks)

29. Which one of the following characteristics allows a consumer to unilaterally provision computing capabilities automatically without requiring human interaction with each service provider?
    A. On-Demand Self-Service, where a consumer can individually provision capabilities, such as server time and network storage as needed automatically
    B. Measured Service, which leverages a sophisticated metering capability at some level of abstraction for transparent usage monitoring
    C. Resource Pooling, where the provider's computing resources are pooled to serve multiple consumers using an established multi-tenant model
    D. Broad Network Access, where capabilities are available over the network and accessed through standard mechanisms using client platforms (2 marks)

30. A small fintech startup with a tight IT budget needs to deploy its first application. Their workloads are unpredictable with spikes during customer onboarding. Which cloud deployment model offers the **BEST** cost efficiency?
    A. Private Cloud System
    B. Public Cloud Service
    C. Hybrid Cloud Setup
    D. Community Cloud Base (2 marks)

31. Several hospitals form a consortium to share medical research data while maintaining compliance and data privacy. Which one of the following deployment models would **BEST** meet their needs?
    A. Public Cloud Service
    B. Private Cloud System
    C. Community Cloud Base
    D. Hybrid Cloud Setup (2 marks)

32. An e-commerce company wants to test a new recommendation engine without affecting its live shopping platform. Which one of the following deployment approaches is **MOST** suitable?
    A. Public Cloud for test use, Private Cloud for production
    B. Private Cloud for test use, Public Cloud for production
    C. Community Cloud only, shared setup
    D. Hybrid Cloud with isolated test zones (2 marks)

33. A cloud service provider wants to maximise hardware utilisation by running multiple operating systems on a single physical server. Which technology enables this?
A. Containerisation Tech
B. Virtualisation Layer
C. Edge Computing Node
D. Serverless Framework (2 marks)

34. A DevOps team deploys applications in containers to ensure consistency between development, testing and production. How do containers differ from virtual machines?
A. They include full operating system per instance
B. They share host operating system kernel, lightweight
C. They can't run within the cloud setup
D. They need full physical servers (2 marks)

35. A video streaming platform requires low-latency data access for video fragments stored across multiple regions. Which cloud storage type **BEST** fits this requirement?
A. Object Data Storage
B. Block Data Storage
C. Cold Data Storage
D. Archive Data Storage (2 marks)

36. A smart city project processes data from thousands of traffic sensors locally before sending summaries to the cloud for analytics. Which one of the following statements is the **MAIN** advantage of this edge computing approach?
A. Lower latency and faster real-time use
B. Unlimited data and storage capacity
C. No network or bandwidth consumption
D. Works only with SaaS-based apps (2 marks)

37. A multinational company needs a secure connection between its on-premises network and multiple cloud instances over the Internet. Which one of the following technologies should it use?
A. VPN – Virtual Private Network
B. FTP – File Transfer Protocol
C. HTTP – Hypertext Protocol
D. SMTP – Mail Transfer Protocol (2 marks)

38. A software firm runs hundreds of containerised microservices and needs a system to handle auto-scaling, load balancing and health checks. Which tool is **BEST** suited?
A. Docker Compose Tool
B. Kubernetes Platform
C. Ansible Automation
D. Git Version Control (2 marks)

39. A media company stores large collections of images and videos online. Which one of the following statements **CORRECTLY** explains why object storage is ideal for this scenario?
A. Block storage fits large unstructured files
B. Object storage suits low-latency database
C. Object storage fits global unstructured data
D. Block storage can't attach to cloud VMs (2 marks)

40. A global retailer wants a cloud solution that can easily scale its infrastructure during seasonal sales events. Which one of the following advantages of Microsoft Azure supports this need?
A. Limited regional availability
B. Scalable and flexible resources
C. Needs on-prem infrastructure
D. Fixed cost, no usage changes (2 marks)

41. A financial organisation using Office 365 and Active Directory wants to extend its environment to the cloud without complex integration. Why is Azure a strong choice?
A. Weak integration with Microsoft tools
B. Tight integration with MS ecosystem
C. Supports Linux workloads only
D. No integration tools available (2 marks)

42. A multinational company runs some workloads on-premises for compliance reasons and others in Azure and AWS. What **KEY** advantage does Azure's hybrid capability provide?
A. Flexibility and interoperability
B. Complex hybrid implementation
C. Limited language support base
D. High licensing cost model (2 marks)

43. A logistics company needs a provider with strong Infrastructure-as-a-Service (IaaS) offerings and global data center coverage. Which provider **BEST** fits?
A. Google Cloud Platform
B. Amazon Web Services
C. IBM Cloud Systems
D. Salesforce Platform (2 marks)

44. A tech startup building a prototype app wants fast deployment and low-cost hosting without complex setup. Which one of the following providers is **BEST** suited?
A. IBM Cloud Systems
B. Digital Ocean Cloud
C. Oracle Cloud Suite
D. Microsoft Azure Base (2 marks)

45. A large enterprise wants to improve its customer engagement and CRM capabilities through a SaaS-based solution. Which one of the following providers should they choose?
A. Salesforce Platform
B. Google Cloud Base
C. Amazon Web Service
D. Digital Ocean Suite (2 marks)

46. A development team wants to deploy web apps without managing servers or patching the underlying infrastructure. Which one of the following Azure components should they select?
A. Azure IaaS Service
B. Azure PaaS (App)
C. Azure Blob Storage
D. Azure Virtual Net (2 marks)

47. A SaaS provider hosts multiple client databases in Azure and wants to optimise resource usage while maintaining isolation between tenants. Which one of the following Azure SQL features supports this?
A. Single SQL Database
B. Elastic SQL Pool
C. Managed SQL Instance
D. Azure Blob Storage (2 marks)

48. A company migrating its on-prem SQL Server databases to Azure requires near 100% compatibility with existing configurations. Which one of the following deployment options is **BEST**?
A. Single SQL Database
B. Elastic SQL Pool
C. Managed SQL Instance
D. Azure Table Storage (2 marks)

49. A data analytics firm needs to process terabytes of information using Azure SQL Database while managing costs efficiently. Which one of the following models allows them to scale compute independently?
A. DTU-based pricing model
B. Core-based pricing model
C. On-prem hardware option
D. Blob data integration (2 marks)

50. A database administrator at a healthcare company must ensure only specific branch offices can access their Azure SQL Database. Which one of the following security features provides this control?
A. Role-Based Access Control
B. SQL Firewall Rules Setup
C. Transparent Data Encryption
D. Data Masking Feature (2 marks)

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DIPLOMA IN DATA MANAGEMENT AND ANALYTICS (DDMA)

LEVEL III

CLOUD DATA SOLUTIONS

TUESDAY: 19 August 2025. Morning Paper. **Time Allowed: 2 hours.**

This paper consists of fifty (50) Multiple Choice Questions. Answer ALL questions by indicating the letter (A, B, C or D) that represents the correct answer. Each question is allocated two (2) marks.

1. Which service model is **MOST** suitable when a developer needs to build, test and deploy an app without managing the underlying infrastructure?
   A. Infrastructure as a Service
   B. Software as a Service
   C. Function as a Service
   D. Platform as a Service (2 marks)

2. Which one of the following deployment models is **BEST** suited for a government institution requiring strict control over data and infrastructure?
   A. Public cloud
   B. Private cloud
   C. Hybrid cloud
   D. Community cloud (2 marks)

3. In the context of Service Oriented Architecture (SOA), how do cloud services typically benefit from service composition?
   A. Through enabling loosely coupled integrations
   B. By reducing the need for APIs
   C. Via enforced data silos for compliance
   D. Through hard-coded service dependencies (2 marks)

4. Which one of the following technologies underpins the abstraction layer essential for cloud scalability?
   A. Application gateways
   B. Identity federation
   C. Virtualisation
   D. Data redundancy (2 marks)

5. What aspect of Microsoft Azure **BEST** illustrates platform flexibility in a multi-cloud strategy?
   A. Region-specific data centers
   B. Proprietary billing dashboards
   C. Exclusive use of Windows workloads
   D. Container orchestration through AKS (2 marks)

6. What key benefit does virtualisation bring to cloud service providers?
   A. Elimination of internet bandwidth needs
   B. Rapid allocation of physical computing units
   C. Efficient utilisation of server hardware
   D. Prevents workload migration between regions (2 marks)

7. Which Azure feature exemplifies the concept of elastic resource provisioning?
   A. Azure Auto-Scale Sets
   B. Azure Active Directory
   C. Azure DevOps Pipelines
   D. Azure Key Vault (2 marks)

8. Which Azure-related drawback should be **MOST** critically evaluated in a highly regulated financial environment?
   A. Limited support for automation scripting
   B. Vendor lock-in for proprietary APIs
   C. Limited performance scalability
   D. Incompatibility with hybrid architecture (2 marks)

9. Which cloud feature makes it easier for organisations to test solutions at lower costs?
   A. Dynamic multi-tenancy
   B. Centralised log aggregation
   C. Elastic pay-as-you-go pricing
   D. Static workload isolation (2 marks)

10. Which one of the following statements is true when comparing SaaS (Software as a Service) to IaaS (Infrastructure as a Service)?
   A. SaaS hides infrastructure from end users
   B. SaaS requires full VM provisioning
   C. SaaS requires network layer configuration
   D. SaaS gives full OS customisation control (2 marks)

11. As a data engineer tasked with deploying a highly customisable analytics pipeline for a growing AI startup, you're required to choose a cloud service model that allows full control over virtual machines, networking and storage. Which model **BEST** suits this requirement?
   A. Infrastructure as a Service (IaaS)

   B. Platform as a Service (PaaS)

   C. Software as a Service (SaaS)

   D. Function as a Service (FaaS) (2 marks)

12. As a data engineer at a cybersecurity startup, you're tasked with implementing access controls on your Azure SQL database. Which feature ensures only authenticated users gain entry?
   A. Row-Level Security
   B. Azure Active Directory Authentication
   C. Transparent Data Encryption
   D. Always Encrypted Keys (2 marks)

13. Your data engineering team needs to block unwanted IP addresses from accessing your Azure SQL database. What is the **MOST** appropriate control?
    A. Network Security Group Policies
    B. Row-Level Security Filters
    C. SQL Server Firewall Rules
    D. Azure DevOps Permissions (2 marks)

14. At a health-tech firm, databases store sensitive patient data. Which one of the following security measures ensures the data is unreadable even if accessed without authorisation?
    A. Azure SQL Auditing
    B. SQL Server Extended Events
    C. Azure Diagnostic Settings
    D. Transparent Data Encryption (2 marks)

15. A fintech company needs to prevent specific engineers from seeing sensitive customer financial data within the same table. What approach allows this?
    A. Firewall Rules
    B. Database Role Assignments
    C. Row-Level Security
    D. SQL Injection Protection (2 marks)

16. A SaaS product's architecture team wants to monitor who accesses confidential tables in the Azure SQL database. What should they enable?
    A. Azure SQL Auditing
    B. Azure Security Center Insights
    C. Blob Access Tier Logs
    D. Azure Monitor Alerts Only (2 marks)

17. You're tasked with storing encryption keys used for securing financial data in SQL databases. What service helps you manage and control key access?
    A. Azure Bastion
    B. Azure Key Vault
    C. Azure Front Door
    D. Azure DevTest Labs (2 marks)

18. A technology firm must comply with strict privacy standards like GDPR. What Azure feature helps classify and label sensitive columns in their databases?
    A. SQL Agent Jobs
    B. Azure Data Factory Pipelines
    C. Data Discovery and Classification
    D. Azure Private Endpoints (2 marks)

19. A digital product team is worried about potential threats inside their cloud database environment. What Azure-native feature detects anomalies and potential attacks?
    A. Azure Firewall Premium
    B. Azure Storage Lifecycle Rules
    C. Power BI Data Gateway
    D. Azure SQL Threat Detection (2 marks)

20. To comply with internal audit requirements, your data engineering team must retain logs for all access attempts to your SQL database. Where can these logs be sent for analysis?
A. Azure Files
B. Azure Monitor Metrics
C. Azure Service Bus Topics
D. Event Hubs (2 marks)

21. During a security audit, a question is raised about encryption at rest. What Azure feature satisfies this requirement for SQL databases?
A. Azure Synapse Studio
B. SQL Audit Logs
C. Managed Identity Policies
D. Transparent Data Encryption (TDE) (2 marks)

22. As a data engineer at a SaaS (Software as a Service) analytics company, you notice reports are loading slowly in the client dashboard. What is the most effective Azure-native tool to help you identify the root cause in SQL query execution?
A. Azure SQL's Query Performance Insight
B. Azure Monitor alerts for high CPU
C. Enabling Geo-Replication for high availability
D. Exporting logs to Azure Blob Storage (2 marks)

23. Your team at a fintech startup observes delays in customer transaction reports. Which Azure SQL feature helps you analyse and tune resource-intensive queries?
A. Azure SQL Vulnerability Assessment
B. Azure Monitor Auto scale
C. Query Performance Insight
D. Azure Data Explorer Metrics (2 marks)

24. Your e-commerce application running on Azure Managed Instance reports random timeouts. As a data engineer, where should you begin your performance investigation?
A. Azure DNS zone configurations
B. Audit logs in Blob storage
C. Load balancer health probe settings
D. Azure SQL execution plan analysis (2 marks)

25. A data engineering team wants real-time visual feedback on database performance trends for executive dashboards. What is the **BEST** solution?
A. Schedule exports to Excel
B. Stream metrics from Azure Monitor to Power BI
C. Query diagnostics using SQL Server Profiler
D. Store performance snapshots in Azure Files (2 marks)

26. During an internal test, your application shows high response time while reading data. What metric should you examine for possible disk pressure?
A. CPU Steal Time
B. Login attempt success rate
C. Azure AD sync interval
D. IO latency in Azure Monitor (2 marks)

27. A DevOps team building telemetry for their tech product wants to capture fine-grained SQL logs. Which combination allows the most flexibility?
A. Event Hubs and Log Analytics
B. Azure Security Center only
C. Azure Bastion with VPN tunneling
D. SSIS Data Flows (2 marks)

28. At your AI product company, you notice queries fetching training data are increasingly slower. Which service can suggest indexing or schema changes?
A. Azure Active Directory
B. Visual Studio Code Metrics
C. Azure SQL Automatic Tuning
D. Azure Monitor Alerts (2 marks)

29. Your company's architecture team wants to unify diagnostics across SQL, blob storage and compute services. Which Azure feature should you configure?
A. Azure Traffic Manager
B. Azure CLI audit exporter
C. SQL geo-fencing policies
D. Azure Monitor Diagnostic Settings (2 marks)

30. As a data engineer at a BI software firm, you find dynamic SQL queries are frequently consuming more CPU. What could likely be causing the issue?
A. They are not parameterized properly
B. They use indexes inefficiently
C. They exceed regional quotas
D. They conflict with TLS handshake (2 marks)

31. The architecture team of your social media analytics platform wants full visibility across logs, metrics and telemetry sources. Which one of the following tools would you use?
A. Azure Policy
B. Azure Event Grid
C. Azure Monitor
D. Azure SQL Geo-backup (2 marks)

32. A new AI model integration introduces performance variability. You need to trace runtime behaviour and query metrics historically. What do you use?
A. Power BI Dataflows
B. Azure SQL Query Store
C. Synapse Spark Pool Logs
D. Azure Blob Tier Access Logs (2 marks)

33. Your team at a B2B SaaS company manages over 50 databases. You want to audit sensitive operations selectively. Which method gives control over specific actions?
A. Azure Event Grid
B. Resource Manager Templates
C. SQL Extended Events with targeted filters
D. Azure Service Bus (2 marks)

34. In the context of deploying an enterprise-grade solution, why might an organisation choose Azure SQL Managed Instance over Azure SQL Database?
A. To reduce compute costs through DTU scaling
B. For compatibility with on-premises SQL Server features
C. To simplify storage expansion via blob-tiering
D. For native support of serverless compute pools (2 marks)

35. When managing identity across cloud services, what primary function does Azure Active Directory serve?
A. It controls user authentication and role-based access
B. It provides private DNS routing across subscriptions
C. It stores relational data in columnar format
D. It monitors CPU and IOPS performance (2 marks)

36. Which Azure SQL deployment model is most suitable for independent, isolated database tenants?
A. Elastic pool
B. Managed instance
C. Single database
D. Shared logical server (2 marks)

37. A DevOps team wants to integrate continuous delivery pipelines directly with cloud-hosted SQL services. What Azure service supports this workflow?
A. Azure App Configuration
B. Visual Studio Team Services
C. Azure Network Watcher
D. Azure Monitor Metrics (2 marks)

38. In what scenario would Azure Synapse be preferred over Azure SQL Database?
A. When hosting a multi-region transactional app
B. When prioritizing low-latency mobile access
C. For deploying a global failover instance
D. For handling petabyte-scale analytical workloads (2 marks)

39. What Azure compute component is directly responsible for hosting containerised microservices?
A. Azure Virtual Machines
B. Azure App Services
C. Azure Kubernetes Service
D. Azure SQL Logical Server (2 marks)

40. Which aspect of Azure SQL Database ensures performance predictability across pooled resources?
A. Shared resource governance in elastic pools
B. Custom alert-based monitoring
C. Dynamic scaling of serverless nodes
D. Dedicated VNET peering per user (2 marks)

41. Why is Azure SQL Managed Instance considered ideal for lift-and-shift database migrations?
A. It supports legacy hardware-based encryption
B. It provides automatic configuration for all schemas
C. It enables feature parity with on-premise SQL Server
D. It removes the need for data classification (2 marks)

42. An organisation needs to monitor SQL Database performance in real time. Which built-in tool is most suitable?
A. Azure Automation Runbooks
B. Query Performance Insight
C. Virtual Machine Insights
D. Azure Data Factory (2 marks)

43. How does the Azure Portal simplify the deployment of SQL Database solutions?
A. Through auto-scaling of JSON endpoints
B. Via graphical configuration and wizard-based setup
C. By enforcing strict regional network isolation
D. Through binary provisioning of role-based keys (2 marks)

44. Which one of the following scenarios **BEST** illustrates when to use Azure SQL elastic pools?
A. Applications with constant, predictable usage
B. Databases with varying and unpredictable activity
C. Applications requiring high GPU parallelism
D. Databases using time-series telemetry indexing (2 marks)

45. Which storage type within Azure is **BEST** suited for storing semi-structured telemetry logs?
A. Azure File Shares
B. Azure Blob Storage
C. Azure Table Storage
D. Azure Queue Storage (2 marks)

46. When setting up an Azure SQL Database, what benefit does geo-replication provide _____.
A. enforces row-level access control policies
B. synchronizes databases across regions for failover
C. monitors SQL queries for optimisation
D. increases billing transparency across workloads (2 marks)

47. Which Azure service allows the execution of backend logic in response to HTTP triggers?
A. Azure Event Grid
B. Azure Functions
C. Azure SQL Data Sync
D. Azure App Gateway (2 marks)

48. How does Azure Storage Account support security and scalability in cloud database architecture?
A. By encrypting SQL schemas at runtime
B. Through role-based replication of blob snapshots
C. By offering region-based tiers with network rules
D. Through virtual hardware-level firewall tuning (2 marks)

49. Which one of the following enables secure API interactions with Azure SQL resources?
    A. Azure ExpressRoute
    B. Azure Data Lake Gen2
    C. Azure Service Principals
    D. Azure Logic Apps Scheduler (2 marks)

50. In evaluating a cloud environment, which one of the characteristics below **MOST** challenges legacy IT structures in terms of rapid provisioning?
    A. On-demand self-service
    B. Broad network access
    C. Resource pooling (2 marks)
    D. Measured service

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DIPLOMA IN DATA MANAGEMENT AND ANALYTICS (DDMA)

LEVEL III

CLOUD DATA SOLUTIONS

WEDNESDAY: 23 April 2025. Morning Paper. **Time Allowed: 2 hours.**

This paper consists of fifty (50) Multiple Choice Questions. Answer ALL questions by indicating the letter (A, B, C or D) that represents the correct answer. Each question is allocated two (2) marks.

1. A company is planning to migrate its on-premises database to Microsoft Azure. The company requires a solution that offers high availability, scalability, and built-in intelligence for performance optimisation. Which of the following Azure database solutions would **BEST** meet these requirements, and why?
   A. Azure SQL Database – It provides a fully managed relational database service with built-in intelligence for performance optimization, high availability, and scalability.
   B. Azure Cosmos DB – It is a NoSQL database that offers global distribution and low latency but lacks built-in intelligence for relational data.
   C. Azure Blob Storage – It is designed for storing unstructured data like images and videos but does not support relational database functionalities.
   D. Azure Virtual Machines – It allows the company to host its own database software but requires manual management of scalability and high availability. (2 marks)

2. A startup is developing a new application that requires a cloud-based database solution. The application needs to handle both structured and unstructured data, support global distribution and provide low-latency access for users worldwide. Based on the learning outcomes and content provided, which of the following Azure services would **BEST** meet these requirements, and why?
   A. Azure SQL Database – It is a fully managed relational database service that supports structured data but lacks support for unstructured data and global distribution.
   B. Azure Cosmos DB – It is a multi-model database that supports structured and unstructured data, offers global distribution, and provides low-latency access.
   C. Azure Blob Storage – It is designed for storing unstructured data but does not support structured data or global distribution.
   D. Azure Synapse Analytics – It is a data warehousing solution that supports structured data but is not optimised for unstructured data or low-latency access. (2 marks)

3. Which one of the following services is **NOT** a cloud computing service model?
   A. Software as a Service (SaaS)
   B. Infrastructure as a Service (IaaS)
   C. Network as a Service (NaaS)
   D. Platform as a Service (PaaS) (2 marks)

4. Which one of the following types of grid computing splits a main task into multiple subtasks, executes each in parallel on a separate node and combines the results of the subtasks to get the main task's result?
   A. Computational
   B. Collaborative
   C. Modular
   D. Manuscript (2 marks)

5. Which one of the following clouds is semi-public and shared between members of a select group of organisations?
   A. Public
   B. Private
   C. Hybrid
   D. Community (2 marks)

6. Which cloud computing characteristic below addresses provision of service to multiple clients from the same physical resource?
   A. Virtualisation
   B. Resource pooling
   C. Resilient computing
   D. Broad network access (2 marks)

7. Which aspect of cloud computing ensures that their systems can handle increased demand without crashing?
   A. Scalability
   B. Predictability
   C. Mobility
   D. Security (2 marks)

8. What does the term "Xaas" represent in cloud computing?
   A. Twitter (X) as a service
   B. Function as a Service
   C. Anything as a service
   D. Infrastructure as a service (2 marks)

9. Which one of the following resources is at the front end of a cloud computing deployment?
   A. Web browser
   B. Cloud runtime
   C. Service
   D. Storage (2 marks)

10. Which one of the following layers is found in cloud computing architecture?
   A. Presentation layer
   B. Session layer
   C. Network layer
   D. Platform layer (2 marks)

11. Which one of the following programs is used to divide and allocate cloud resources between several customers?
   A. Slicer
   B. Hypervisor
   C. Operating system
   D. Lifo (2 marks)

12. Which one of the following cloud computing management practices assists in identifying errors committed by the user in the system?
   A. Vendor Lock-In
   B. Solution Testing and Validation
   C. Monitoring audit log
   D. Data flow diagram (2 marks)

13. Which one of the following cloud computing service models offers the greatest level of control to the customer?
    A. SaaS
    B. PaaS
    C. IaaS
    D. BaaS (2 marks)

14. Which one of the following statements describes the primary difference between PaaS and IaaS?
    A. PaaS provides tools for development, while IaaS provides virtualised hardware
    B. IaaS offers complete applications, while PaaS offers only infrastructure
    C. IaaS is easier to use than PaaS
    D. There is no difference; they are interchangeable terms (2 marks)

15. Which one of the following cloud computing models is **MOST** suitable for startups looking to develop and launch their applications quickly without managing infrastructure?
    A. SaaS
    B. PaaS
    C. IaaS
    D. Hybrid Cloud (2 marks)

16. Which one of the following types of cloud deployment blends different clouds of the same type?
    A. Multi cloud
    B. Public Cloud
    C. Private Cloud
    D. Hybrid Cloud (2 marks)

17. Which one of the following statements provides the main challenge of using a Hybrid Cloud?
    A. It requires immense knowledge and wide expertise on the subject
    B. Difficulty in integrating public and private cloud environments
    C. Inability to scale resources
    D. High dependence on external vendors (2 marks)

18. Which one of the following statements describes the primary purpose of containerisation in cloud computing?
    A. To provide unlimited storage capacity
    B. To replace virtual machines entirely
    C. To secure data in private cloudswhich eventually decrease the trust amongst the users
    D. To package applications and their dependencies for portability and scalability (2 marks)

19. Identify the statement from the list below that explains the role of edge computing in cloud computing.
    A. To replace traditional cloud technologies
    B. To process data closer to the source of generation for faster response times
    C. To eliminate the need for virtual machines
    D. To centralise all data processing in a single location (2 marks)

20. Which one of the following statements **BEST** describes the primary advantage of Microsoft Azure?
    A. It offers on-demand scalability for applications and services
    B. It requires on-premises servers for deployment
    C. It is limited to Microsoft products only
    D. It requires integration with DevOps tools (2 marks)

21. Which one of the following applications is **NOT** an example of cloud service provider?
    A. Amazon Web Services (AWS)
    B. Google Cloud Platform (GCP)
    C. Microsoft Azure
    D. Oracle Cloud Applications (OCA) (2 marks)

22. Select from the list below, a billing model commonly offered by most cloud service providers.
    A. Fixed yearly subscription
    B. Pay-as-you-go
    C. Pay-per-minute
    D. Free for all services (2 marks)

23. Which one of the following statements **BEST** describes how Microsoft Azure be used for data storage?
    A. By providing physical hard drives to customers
    B. By offering scalable and secure cloud storage solutions like Blob Storage and Data Lake
    C. By managing only local databasesas provided by Google
    D. By enabling secure and efficient communication between different Azure services and on-premises networks (2 marks)

24. Which one of the following Microsoft Azure storage types is **BEST** suited for storing large amounts of unstructured data, such as images or videos?
    A. Table storage
    B. Queue storage
    C. Blob storage
    D. File storage (2 marks)

25. Which one of the following statements indicates a replication option not available in Azure Storage Accounts?
    A. Locally Redundant Storage (LRS)
    B. Zone-Redundant Storage (ZRS)
    C. Multi-Redundant Storage (MRS)
    D. Geo-Redundant Storage (GRS) (2 marks)

26. Which one of the following types of scaling found in Microsoft Azure SQL database allows the user to adjust resources like CPU, memory and storage without downtime?
    A. Vertical scaling
    B. Horizontal scaling
    C. Dynamic scaling
    D. Manual scaling (2 marks)

27. Which one of the following statements **BEST** describes how Azure SQL database help prevent unauthorised access at the network level?
    A. By using Virtual Network (VNet) Integration
    B. By enabling Multi-Factor Authentication (MFA)
    C. By enforcing role-based access control (RBAC)
    D. By using IP firewalls and virtual network service endpoints (2 marks)

28. Which one of the following tools is a built-in Azure SQL database feature to protect against SQL injection attacks?
A. Always Encrypted
B. SQL Auditing
C. Dynamic Data Masking
D. Transparent Data Encryption (TDE) (2 marks)

29. Which one of the following Microsoft Azure services provides full-stack checking, advanced analytics and intelligent insights for your Azure resources?
A. Azure Active Directory
B. Azure Monitor
C. Azure DevOps
D. Azure Sentinel (2 marks)

30. In order to mount files from on-premises windows machine to the cloud, which one of the following services will you use?
A. Azure file
B. Azure blob storage
C. Azure cold storage
D. Azure hot storage (2 marks)

31. Which one of the following resources does a customer provides in a software as service model?
A. Internet resources
B. Data storage
C. Application software
D. Application data (2 marks)

32. A company hosts an accounting system used by all staff. It has low usage for the first three weeks of the month and high usage during the last week. Which benefit of Azure Cloud services supports cost management for this type of usage pattern?
A. High availability
B. High latency
C. Elasticity
D. Load balancing (2 marks)

33. Which one of the following terms represents the two basic IT resources of IaaS platform?
A. OS and compiler
B. VMS and cloud storage
C. Interpreter and compiler
D. Linker and loader (2 marks)

34. In a cloud design matrix, which of the following terms identifies the uptime requirements of the cloud application?
A. Availability
B. Backup
C. Contract
D. Accessibility (2 marks)

35. In cloud computing context, which one of the following terms refers to allowing only authorised access and disclosure to information?
A. Integrity
B. Availability
C. Consistency
D. Confidentiality (2 marks)

36. Which one of the following terms represents a network of clouds that are linked with each other?
A. Inter-cloud
B. Internet
C. Multi-cloud
D. Net-cloud (2 marks)

37. Which one of the following platforms is used to simulate cloud computing infrastructure and services?
A. Microsoft Azure
B. Python
C. Cloud Prototype
D. CloudSim (2 marks)

38. Which one of the following models attempts to categorise a cloud network based on four-dimensional factors?
A. Cloud cube
B. Cloud square
C. Cloud service
D. Cloud computing (2 marks)

39. Which of the following architectural layer is used as a backend in cloud computing?
A. Soft
B. Client
C. Cloud
D. Hard (2 marks)

40. Which one of the following architectural standards works with cloud computing industry?
A. Web applications frameworks
B. Service oriented architecture
C. Finance generating architecture
D. Standardised web services (2 marks)

41. User restriction is one of the crucial constraints to be evaluated during the cloud because unauthorised access can compromise an enterprise's critical data to the outside world. Choose one of the following parameters that is required for a user when using cloud computing. A user must _____.
A. declare gender
B. be of adult age
C. establish an identity
D. be from a reputable firm (2 marks)

42. Which one of the following terms **BEST** describes "cloud" in cloud computing?
A. User
B. Wireless
C. Hard drive
D. Internet (2 marks)

43. Select from the list below a type of cloud services billing method recommended for users who prefer flexible access to computer resources without any up-front payment or long-term commitment.
A. On-demand pricing
B. Pay-as-you-go
C. Reserved instances pricing
D. Spot pricing model (2 marks)

44. Which one of the following cloud computing service models is created for programmers to develop, test and run applications?
A. Software as a service
B. Infrastructure as a service
C. Platform as a service
D. Hardware as a service (2 marks)

45. Which one of the following kinds of relationships exists between cloud services and their customers?
A. Many – to – many
B. Many – to – one
C. One – to – one
D. One – to – many (2 marks)

46. Which one of the following cloud computing elements helps to guard against downtime and determine cost?
A. Bandwidth fees
B. Virtual private network
C. Service level agreement
D. Backup and security (2 marks)

47. Which one of the following cloud computing types has less security service?
A. PaaS
B. IaaS
C. SaaS
D. XaaS (2 marks)

48. Which one of the following professionals is involved in identifying and integrating public and private cloud computing services and solutions that help organisations operate with greater efficiency, security and attention to detail?
A. Cloud engineer
B. Network engineer
C. Edge Engineer
D. Computing technician (2 marks)

49. Which one of the following cloud-computing infrastructures has the capacity to manage cloud capacity automatically?

A. Large instance
B. Medium instance
C. Huge instance
D. Small instance (2 marks)

50. Which one of the following cloud computing characteristics indicates the representation that hides specifics from a consumer of services making the system more generic and thus easily understood?

A. Encapsulation
B. Abstraction
C. Flexibility
D. Reliability (2 marks)

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DIPLOMA IN DATA MANAGEMENT AND ANALYTICS (DDMA)

LEVEL III

CLOUD DATA SOLUTIONS

TUESDAY: 3 December 2024. Morning Paper. **Time Allowed: 2 hours.**

This paper consists of fifty (50) Multiple Choice Questions. Answer ALL questions by indicating the letter (A, B, C or D) that represents the correct answer. Each question is allocated two (2) marks.

1. Which one of the following cloud deployment models provides the highest level of control and customisation?
   A. Public Cloud
   B. Private Cloud
   C. Hybrid Cloud
   D. Community Cloud (2 marks)

2. What is the primary service model provided by Google Compute Engine (GCE)?
   A. Infrastructure as a Service (IaaS)
   B. Software as a Service (SaaS)
   C. Platform as a Service (PaaS)
   D. Function as a Service (FaaS) (2 marks)

3. What does AWS Shield protect against?
   A. Data loss
   B. Distributed denial-of-service (DDoS) attacks
   C. Server failure
   D. Data breaches (2 marks)

4. Which one of the following cloud service models allows users to access software applications over the internet without the need for installation or maintenance and where the provider manages the infrastructure, software and data security?
   A. IaaS
   B. PaaS
   C. SaaS
   D. BaaS (2 marks)

5. The primary objective of connecting multiple computers across different locations to work together in grid computing is to _____.
   A. ensure data security and privacy across all connected systems
   B. distribute processing power and resources to solve large-scale computational problems
   C. reduce energy consumption in a centralised data centre
   D. provide a single, unified operating system environment for all users (2 marks)

6. Which one of the following statements **BEST** describes the pricing model for utility computing?
   A. A fixed-rate model where users pay a flat fee regardless of resource consumption
   B. A tiered pricing model based on long-term subscription contracts
   C. A pay-per-use model where users are charged based on the exact amount of computing resources consumed
   D. A free-tier model where users get unlimited access to computing resources with no charges (2 marks)

7. What does the term "serverless computing" refer to in cloud environments?
   A. Running applications without physical servers
   B. Applications that don't require a backend
   C. Cloud computing without security features
   D. Provider dynamically manages the allocation of machine resources (2 marks)

8. Which one of the following cloud storage solution is designed for handling massive amounts of unstructured data?
   A. Block Storage
   B. Object Storage
   C. File Storage
   D. Cache Storage (2 marks)

9. What is the primary role of a Content Delivery Network (CDN) in cloud services?
   A. Caching and delivering web content to users from geographically distributed locations
   B. Distributing application code
   C. Hosting virtual machines
   D. Storing sensitive data (2 marks)

10. What does the term "multitenancy" refer to in cloud computing?
   A. Using multiple clouds for data storage
   B. Single application serving only one tenant
   C. Multiple organisations sharing the same physical infrastructure
   D. Running multiple instances of an application on separate servers (2 marks)

11. Which Amazon Web Services (AWS) service allows for the management of policies and permissions for AWS resources across multiple accounts, enabling organisations to centrally manage access and enforce security controls?
   A. AWS Identity and Access Management (IAM)
   B. AWS Organisations
   C. AWS Single Sign-On (SSO)
   D. AWS Control Tower (2 marks)

12. What is the function of Amazon CloudFront?
   A. Security auditing
   B. Network firewall
   C. Content delivery network (CDN)
   D. Data storage (2 marks)

13. Which Amazon Web Services AWS service is designed for building and running applications without managing servers?
    A. AWS Lambda
    B. AWS Fargate
    C. Amazon RDS
    D. Amazon EC2 (2 marks)

14. Which type of Azure Storage Account is specifically designed to provide high-performance and scalable storage for workloads that require low-latency access to frequently accessed data, such as big data analytics and IoT applications?
    A. Blob Storage Account
    B. File Storage Account
    C. Premium Block Blob Storage Account
    D. General Purpose v2 Storage Account (2 marks)

15. Which Azure Database service provides a fully managed relational database with built-in intelligence for optimising performance, security and availability, while also offering features like auto-scaling and automated backups?
    A. Azure SQL Database
    B. Azure Cosmos DB
    C. Azure Database for PostgreSQL
    D. Azure Database for MariaDB (2 marks)

16. In a Service-Oriented Architecture (SOA), which of the following principles emphasises the design of services to be reusable, discoverable and loosely coupled to allow for easier integration and flexibility in application development?
    A. Statelessness
    B. Abstraction
    C. Service reusability
    D. Service encapsulation (2 marks)

17. Which Azure service provides a platform for building and hosting web applications?
    A. Azure Kubernetes Service (AKS)
    B. Azure App Service
    C. Azure Functions
    D. Azure Logic Apps (2 marks)

18. Which of the following Azure services is a managed data warehouse solution designed for large-scale data analysis?
    A. Azure SQL Database
    B. Azure Cosmos DB
    C. Azure Data Factory
    D. Azure Synapse Analytics (2 marks)

19. Which one of the following Azure components is primarily responsible for managing and automating the deployment, scaling, and management of containerised applications across a cluster of virtual machines?
    A. Azure App Service
    B. Azure Functions
    C. Azure Kubernetes Service (AKS)
    D. Azure Container Instances (2 marks)

20. What is the function of Azure Logic Apps?
    A. Automating workflows
    B. Creating virtual machines
    C. Monitoring application performance
    D. Storing unstructured data (2 marks)

21. Which of the following statements **BEST** describes the primary benefit of using Azure Elastic Pools?
    A. They provide dedicated resources to each database, ensuring consistent performance
    B. They allow multiple databases to share a set of resources, optimising cost and resource utilisation
    C. They automatically back up databases at fixed intervals without user intervention
    D. They enable real-time analytics and reporting for individual databases (2 marks)

22. What is the term used for a type of cloud computing deployment model in which a cloud infrastructure is shared among several organisations that have common goals, requirements, or concerns (such as security, compliance or performance)?
    A. Public cloud
    B. Private cloud
    C. Hybrid cloud
    D. Community cloud (2 marks)

23. Which cloud service model provides virtualised computing resources over the internet?
    A. IaaS
    B. SaaS
    C. PaaS
    D. FaaS (2 marks)

24. Which of the following is **NOT** a characteristic of cloud computing?
    A. Resource pooling
    B. Broad network access
    C. Fixed storage capacity
    D. Measured service (2 marks)

25. Elasticity in cloud computing refers to the _____.
    A. ability to use multiple types of services
    B. ability to dynamically adjust computing resources
    C. flexibility of payment methods
    D. security of cloud data (2 marks)

26. What type of cloud service is Microsoft OneDrive an example of?
    A. PaaS
    B. IaaS
    C. FaaS
    D. SaaS (2 marks)

27. What does the term “cloudbursting” refer to?
    A. A cloud security breach
    B. An overflow of cloud data
    C. Extending an application from a private cloud to a public cloud to handle peak demand
    D. A type of cloud storage solution (2 marks)

28. Which Azure feature provides intelligent performance insights and recommendations for optimising query performance and diagnosing performance issues in Azure SQL Database?
    A. Azure SQL Auditing
    B. Azure SQL Data Sync
    C. Azure SQL Query Store
    D. Azure SQL Database Advisor (2 marks)

29. The Azure component that provides a managed NoSQL database with global distribution and low latency is known as Azure _____.
    A. SQL Database
    B. Cosmos DB
    C. Blob Storage
    D. Table Storage (2 marks)

30. Which one of the following Azure components is used to automate repetitive tasks and workflows?
    A. Azure DevOps
    B. Azure Logic Apps
    C. Azure Monitor
    D. Azure Virtual Machines (2 marks)

31. What is the role of “partitions” in Azure Event Hubs?
    A. They act as virtual machines that process the incoming events
    B. They divide the event stream to allow for parallel consumption and improve throughput
    C. They store the metadata for events processed by Event Hubs
    D. They ensure the encryption of events at rest (2 marks)

32. Which one of the following Azure services is used to secure and manage secrets, keys and certificates?
    A. Azure Active Directory
    B. Azure Key Vault
    C. Azure Monitor
    D. Azure DevOps (2 marks)

33. What is the primary purpose of Azure DevOps?
    A. Managing virtual machines
    B. Deploying and managing cloud databases
    C. Providing development tools and continuous integration/continuous deployment (CI/CD) pipelines
    D. Automating workflows (2 marks)

34. Which service provides distributed denial of service (DDoS) protection in Azure?
    A. Azure Firewall
    B. Azure Security Center
    C. Azure Policy
    D. Azure DDoS Protection (2 marks)

35. Which of the following is a fully managed relational database service in Azure?
    A. Azure Cosmos DB
    B. Azure SQL Database
    C. Azure Blob Storage
    D. Azure Table Storage (2 marks)

36. In Azure Synapse Analytics, which feature allows for the querying of both structured and unstructured data across a data lake and relational databases using a unified experience?
    A. Synapse Pipelines
    B. Synapse Studio
    C. PolyBase
    D. SQL Data Sync (2 marks)

37. Which of the following Azure database offerings supports both SQL and PostgreSQL?
    A. Azure Database for PostgreSQL
    B. Azure SQL Database
    C. Azure SQL Managed Instance
    D. Azure Database for MySQL (2 marks)

38. Which Azure database service provides a NoSQL key-value store for structured data?
    A. Azure Blob Storage
    B. Azure SQL Managed Instance
    C. Azure Database for PostgreSQL
    D. Azure Table Storage (2 marks)

39. Which of the following **BEST** describes a common responsibility of cloud providers in managing encryption keys for their customers?
    A. Automatically generating and rotating keys without any customer control over the key lifecycle
    B. Offering a secure environment for storing and managing encryption keys, while allowing customers to define and control key lifecycle policies
    C. Encrypting customer data without giving them the option to manage or access their own encryption keys
    D. Providing a universal encryption key for all customers to ensure uniform encryption practices across cloud services (2 marks)

40. Which of the following supports multi-model database capabilities, including document, graph, and column-family models?
    A. Azure SQL Database
    B. Azure Database for PostgreSQL
    C. Azure Cosmos DB
    D. Azure Data Lake Storage (2 marks)

41. What feature does Azure Active Directory (Azure AD) Premium provide to protect against risky sign-ins?
    A. Azure Monitor
    B. Conditional Access
    C. Azure Site Recovery
    D. Azure Blob Encryption (2 marks)

42. What is the function of Azure Sentinel?
    A. Providing security information and event management (SIEM)
    B. Managing identity and access
    C. Automating backups and disaster recovery
    D. Distributing virtual networks across regions (2 marks)

43. Which Azure tool allows you to simulate a failover for disaster recovery testing without affecting your production environment?
    A. Azure Backup
    B. Azure Security Center
    C. Azure Site Recovery
    D. Azure Traffic Manager (2 marks)

44. Which Azure service helps to resolve DNS-related issues by testing DNS responses across different Azure regions?
    A. Azure DNS
    B. Azure Network Watcher
    C. Azure Log Analytics
    D. Azure Traffic Manager (2 marks)

45. Which Azure service is designed to help troubleshoot slow network performance by providing network latency and connectivity monitoring?
    A. Azure Network Watcher
    B. Azure Application Insights
    C. Azure SQL Analytics
    D. Azure Traffic Manager (2 marks)

46. In Azure SQL Database, Row-Level Security (RLS) is implemented using security predicates. Which of the following best describes the role of a security predicate in enforcing RLS policies?
    A. It applies encryption to individual rows of data to prevent unauthorised access
    B. It filters rows dynamically by executing a user-defined functions
    C. It automatically assigns roles to users based on their login credentials and access privileges
    D. It creates a separate table for each user to isolate their data from others (2 marks)

47. When using Azure Monitor for custom logging, which one of the following features allows you to define your own log queries to analyse telemetry data in real time?
    A. Log Analytics Workspace
    B. Azure Service Bus
    C. Azure Traffic Manager
    D. Azure Automation (2 marks)

48. Which of the following metrics is **MOST** commonly used to monitor the performance of cloud infrastructure resources such as virtual machines and containers?
    A. Query Execution Time
    B. CPU Utilisation, Memory Usage and Disk I/O
    C. Page Load Time
    D. Network Latency for API Requests (2 marks)

49. Which of the following methods is **MOST** effective in ensuring data at rest in a cloud environment is protected from unauthorised access?
    A. Data Compression
    B. Using cloud service provider's monitoring tools
    C. Storing data in multiple availability zones
    D. Encryption using managed keys (2 marks)

50. Which of the following is a **KEY** benefit of utility computing in cloud environments?
    A. Enhanced performance through proprietary hardware
    B. Predictable, fixed pricing for resource consumption
    C. Elastic scalability, allowing users to scale resources up or down based on demand
    D. Pre-configured infrastructure with no customisation options (2 marks)

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DIPLOMA IN DATA MANAGEMENT AND ANALYTICS (DDMA)

LEVEL III

CLOUD DATA SOLUTIONS

TUESDAY: 20 August 2024. Morning Paper. **Time Allowed: 2 hours.**

This paper consists of fifty (50) Multiple Choice Questions. Answer ALL questions by indicating the letter (A, B, C or D) that represents the correct answer. Each question is allocated two (2) marks.

1. The tool that can be used to write and run queries to analyse log data in Azure Monitor is called _____.
   A. azure data studio
   B. azure CLI
   C. kusto query language (KQL)
   D. powerShell (2 marks)

2. The Azure service that provides Security Information and Event Management (SIEM) and Security Orchestration Automated Response (SOAR) capabilities is referred to as _____.
   A. azure security center
   B. azure sentinel
   C. azure active directory
   D. azure firewall (2 marks)

3. Company ABC needs to process and analyse large volumes of real-time streaming data. Which Azure service is **MOST** appropriate for this scenario?
   A. Azure Data Lake Storage
   B. Azure Databricks
   C. Azure Stream Analytics
   D. Azure SQL Database (2 marks)

4. Which Azure service provides a platform for building, testing and deploying applications with continuous integration and continuous deployment (CI/CD) capabilities?
   A. Azure DevOps
   B. Azure App Service
   C. Azure Virtual Machines
   D. Azure Kubernetes Service (AKS) (2 marks)

5. Which statement **BEST** defines the consumption-based model in cloud computing?
   A. Paying a fixed monthly fee for unlimited resources
   B. Charging based on the number of users accessing the cloud
   C. Paying only for the resources used
   D. Offering free access to all cloud services (2 marks)

6. Which one of the following is an example of a Software as a Service (SaaS) application?
   A. AWS Lambda
   B. Microsoft Office 365
   C. Azure SQL Database
   D. Google Cloud Storage (2 marks)

7. Which Azure service is designed to automatically distribute incoming traffic across multiple servers to optimize performance?
   A. Azure Load Balancer
   B. Azure Traffic Manager
   C. Azure Application Gateway
   D. Azure Front Door (2 marks)

8. Which tool in Azure allows you to manage and deploy Azure resources through a graphical user interface (GUI)?
   A. Azure PowerShell
   B. Azure Command-Line Interface (CLI)
   C. Azure Portal
   D. Azure Cloud Shell (2 marks)

9. Which component of Azure Machine Learning is used for designing, training, and evaluating machine learning models?
   A. Azure Machine Learning Studio
   B. Azure Machine Learning Service
   C. Azure Machine Learning Compute
   D. Azure Machine Learning Pipelines (2 marks)

10. Which cloud model allows multiple organisations to share the same infrastructure while maintaining distinct privacy and security controls?
   A. Public cloud
   B. Private cloud
   C. Hybrid cloud
   D. Community cloud (2 marks)

11. The logical container for organising your Azure resources is called _____.
   A. management Services
   B. azure Resource Manager (ARM)
   C. subscription
   D. resource Groups (2 marks)

12. Which Azure service provides secure connectivity between on-premises networks and Azure resources?
   A. Azure ExpressRoute
   B. Azure VPN Gateway
   C. Azure Front Door
   D. Azure Traffic Manager (2 marks)

13. When choosing a cloud service model for a company that needs to develop and test applications quickly, which model would you recommend?
   A. IaaS
   B. PaaS
   C. SaaS
   D. Hybrid Cloud (2 marks)

14. Which cloud computing characteristic is most beneficial for a startup company experiencing rapid growth and fluctuating workloads?
   A. High availability
   B. On-demand self-service
   C. Resource pooling
   D. Elasticity (2 marks)

15. Analysing the cost benefits, what would be the primary financial advantage of using a pay-as-you-go pricing model in cloud computing?
   A. Predictable monthly expenses
   B. Reduced upfront capital expenditure
   C. Higher long-term costs
   D. Enhanced data security (2 marks)

16. A business wants to minimise its risk of vendor lock-in while using cloud services. Which of the following strategies would you recommend?
A. Adopting a multi-cloud approach
B. Using proprietary cloud services
C. Relying solely on public cloud services
D. Focusing on a single cloud provider (2 marks)

17. What Azure service would you use to deploy web applications and APIs?
A. Azure Virtual Machines
B. Azure Blob Storage
C. Azure App Service
D. Azure Kubernetes Service (2 marks)

18. When evaluating cloud storage options, what are the key factors to consider for ensuring high availability and data redundancy?
A. Data encryption methods
B. Cost of storage services
C. User interface design
D. Geographic data replication (2 marks)

19. When assessing the security of a cloud environment, which factors should be analysed to ensure comprehensive protection?
A. Cost and user interface
B. Scalability and flexibility
C. Encryption standards and access controls
D. Physical location of data centers (2 marks)

20. When evaluating the performance of a cloud-based application, which metrics are most critical to assess?
A. User interface design and customer service quality
B. Response time, throughput and error rate
C. Cost of cloud services and data storage capacity
D. Vendor reputation and market share (2 marks)

21. A global e-commerce company wants to enhance its website performance for users worldwide. Which cloud service should it use and why?
A. Content Delivery Network (CDN) to cache content closer to users
B. Virtual Private Network (VPN) to secure user connections
C. Data Lake Storage to manage large datasets
D. Kubernetes Service to automate deployment (2 marks)

22. Which service tier in Azure SQL Database is suitable for predictable workloads with low latency requirements?
A. Basic
B. Standard
C. Premium
D. Hyperscale (2 marks)

23. The performance of Azure SQL Data Warehouse can be optimised by _____?
A. by reducing storage capacity
B. by partitioning tables and indexes
C. by disabling encryption
D. by increasing network latency (2 marks)

24. In the context of cloud computing, what is the significance of ensuring compliance with regulatory standards?
A. It helps reduce operational costs
B. It ensures the company avoids legal penalties
C. It simplifies the integration of various services
D. It enhances the scalability of cloud resources (2 marks)

25. What does the term “data residency” refer to in the context of General Data Protection Regulation (GDPR)?
A. The location where data is physically stored
B. The process of encrypting data
C. The process of backing up data
D. The lifecycle management of data (2 marks)

26. Which one of the following **BEST** describes the key considerations to ensure business continuity when developing a disaster recovery plan for cloud infrastructure?
    A. Cost of recovery services and user training
    B. Data replication, backup frequency and recovery time objectives (RTO)
    C. Aesthetic design of the recovery plan
    D. Vendor support and ease of implementation (2 marks)

27. How can Azure Stream Analytics be used to derive insights from real-time data?
    A. By storing data for long-term analysis
    B. By providing tools for batch processing
    C. By enabling real-time data processing
    D. By simplifying the user interface for data management (2 marks)

28. When considering the migration of an enterprise's IT infrastructure to the cloud, what are the key factors to ensure a smooth transition?
    A. Cost and aesthetic design
    B. Compatibility with existing systems, potential downtime and data security
    C. User interface and customer service quality
    D. Market share and advertising (2 marks)

29. Which of the following is **NOT** a beneficial Azure services for implementing a comprehensive data analytics solution?
    A. Azure Data Lake Storage
    B. Azure Synapse Analytics
    C. Azure Virtual Network
    D. Azure Machine Learning (2 marks)

30. A company wants to store and manage sensitive cryptographic keys, secrets and certificates securely in Azure. Which service should they use?
    A. Azure Key Vault
    B. Azure Storage Account
    C. Azure AD Identity Protection
    D. Azure Security Center (2 marks)

31. Which cloud service provider is widely known for its e-commerce platform and extensive cloud services?
    A. Microsoft Azure
    B. Google Cloud Platform
    C. Amazon Web Services
    D. IBM Cloud (2 marks)

32. Which one of the following characteristics **BEST** distinguishes the service mode of public cloud computing from the traditional on-premises IT infrastructure?
    A. Exclusive use by one organisation
    B. Fixed cost for unlimited usage of the service
    C. Scalable resources accessible over the internet
    D. On-premises infrastructure (2 marks)

33. What is the purpose of Azure Cache for Redis in tuning Azure resources?
    A. To monitor security threats
    B. To improve application performance by caching data
    C. To manage virtual networks
    D. To automate resource deployment (2 marks)

34. When considering the implementation of a multi-cloud strategy, what are the primary challenges that need to be addressed?
    A. Vendor management and security integration
    B. Cost optimisation and user training
    C. Service level agreements and network latency
    D. Data storage options and application compatibility (2 marks)

35. What type of data storage format is commonly used in Azure Data Lake Storage?
A. XML
B. ORC
C. Text
D. Parquet (2 marks)

36. Which Azure service should be utilised efficiently for running large-scale data analytics workloads?
A. Azure Virtual Machines
B. Azure Databricks
C. Azure Functions
D. Azure Kubernetes Service (AKS) (2 marks)

37. Which Azure service enables applications to connect securely to resources that support Azure AD authentication without requiring the use of stored credentials?
A. Azure Monitor
B. Azure Key Vault
C. Azure Managed Identity
D. Azure Policy (2 marks)

38. The primary function of a Content Delivery Network (CDN) is _____.
A. content distribution closer to end-users
B. data encryption
C. cloud resource management
D. database query optimisation (2 marks)

39. Which Azure service offers a comprehensive managed relational database solution that includes built-in capabilities for high availability and scalability?
A. Azure Cosmos DB
B. Azure SQL Database
C. Azure Blob Storage
D. Azure HDInsight (2 marks)

40. What are the primary use cases for deploying Azure Virtual Machines in a cloud infrastructure?
A. Providing virtualised computing environments
B. Managing user identities for security purposes
C. Hosting containerised applications in virtual machines
D. Conducting real-time data analytics in Azure (2 marks)

41. What type of data does Azure Advanced Threat Protection (ATP) analyse to detect suspicious activities?
A. Virtual machine logs
B. User behavior and activities
C. SQL Database performance metrics
D. Network traffic (2 marks)

42. Which one of the following is a not valuable consideration that you would need to consider when implementing cloud computing?
A. Security infrastructure and procedures followed by the vendor
B. Identity management and authorisations
C. Physical security controls including the process for natural disasters.
D. System patching included in the old contracts (2 marks)

43. Which one of the following azure services is a cloud-based network security service that protects your Azure Virtual Network resources?
A. Microsoft Authenticator
B. Microsoft Defender for cloud
C. Multifactor Authentication
D. Azure Firewall (2 marks)

44. Which characteristic of cloud computing allows for rapid provisioning and de-provisioning of resources to match fluctuating demand?
A. Scalability
B. Elasticity

C. Redundancy
D. Virtualisation (2 marks)

45. What are the primary considerations when selecting a cloud provider for hosting mission-critical applications?
A. Security, reliability and support
B. User interface and customer service quality
C. Cost and aesthetic design
D. Market share and advertising (2 marks)

46. The block-level storage designed for hosting operating systems and applications on virtual machines is called _____.
A. azure blob storage
B. azure file storage
C. azure disk storage
D. azure resource manager (ARM) (2 marks)

47. Which cloud computing service would you use to manage and analyse large sets of data in a cloud environment?
A. Amazon RDS
B. Google BigQuery
C. Microsoft Office 365
D. Dropbox (2 marks)

48. Which technology enables the creation and management of containerised applications in the cloud?
A. VMware vSphere
B. Docker
C. Apache Hadoop
D. Microsoft SQL Server (2 marks)

49. Which cloud computing technology is used to automate the deployment, scaling and operations of application containers across clusters of hosts?
A. Kubernetes
B. Apache Spark
C. Terraform
D. Ansible (2 marks)

50. The primary use of Azure Cognitive Services is _____.
A. to create and manage virtual networks
B. to integrate AI capabilities into applications
C. to host static websites
D. to provide cloud-based storage (2 marks)

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DIPLOMA IN DATA MANAGEMENT AND ANALYTICS (DDMA)

LEVEL III

CLOUD DATA SOLUTIONS

TUESDAY: 23 April 2024. Morning Paper. **Time Allowed: 2 hours.**

Answer ALL questions by indicating the letter (A, B, C or D) that represents the correct answer. This paper is made up of fifty (50) Multiple Choice Questions. Each question is allocated two (2) marks.

1. Suppose a company wishes to develop and run custom applications without worrying about the underlying infrastructure, which of the following cloud service model should they choose?
   A. IaaS
   B. PaaS
   C. SaaS
   D. Hybrid Cloud (2 marks)

2. Microsoft Azure offers a wide range of services and functionalities to help organisations build, deploy and manage applications and services through Microsoft-managed data centers. Which one of the following is the feature that is used to support serverless functions?
   A. Virtual Machines
   B. Azure Kubernetes Service
   C. Azure Functions
   D. Azure Batch (2 marks)

3. Which one of the following is a Microsoft Azure database service?
   A. Azure Cosmos
   B. Azure Disk Storage
   C. Azure Blob Storage
   D. Azure Load Balancer (2 marks)

4. Which one of the following cloud service model provides access to virtualised computing resources over the internet?
   A. Infrastructure as a Service (IaaS)
   B. Platform as a Service (PaaS)
   C. Software as a Service (SaaS)
   D. Network as a Service (NaaS) (2 marks)

5. What does the Platform as a Service (PaaS) cloud service model primarily offer?
   A. Virtualised computing resources and infrastructure
   B. Development and deployment environments for applications
   C. Software applications and services over the internet
   D. Data storage and backup solutions (2 marks)

6. Which one of the following statement correctly contrasts authentication and authorisation in the context of access management for Azure SQL server database?
   A. Authentication verifies the identity of users, while authorisation determines the actions they are allowed to perform
   B. Authentication controls network access, while authorisation controls database access
   C. Authentication encrypts data in transit, while authorisation encrypts data at rest
   D. Authentication and authorisation are interchangeable terms with the same meaning (2 marks)

7. Which one of the following Azure service provides serverless computing capabilities?
   A. Azure Virtual Machines (VMs)
   B. Azure Kubernetes Service (AKS)
   C. Azure Functions
   D. Azure SQL Database (2 marks)

8. What is Azure SQL Database primarily designed to provide?
   A. NoSQL data storage
   B. On-premises database management
   C. Managed relational database service
   D. Data warehousing solutions (2 marks)

9. Which one of the following Azure SQL database feature provides built-in high availability and disaster recovery capabilities?
   A. Geo-Replication
   B. Backup and Restore
   C. Active Geo-Replication
   D. Automated Failover Groups (2 marks)

10. What is the primary benefit of using Azure Active Directory (AD) for identity management in Azure environments?
   A. Encryption of data in transit
   B. Secure access control and authentication
   C. Monitoring and logging of user activities
   D. Data encryption and compliance management (2 marks)

11. Which Azure SQL Database monitoring feature provides insights into database wait statistics and performance bottlenecks?
   A. Query Store
   B. Dynamic Management Views (DMVs)
   C. Index Advisor
   D. Performance Recommendations (2 marks)

12. Which one of the following statements **BEST** describes cloud computing?
   A. Storing data on physical servers within an organisation's premises
   B. Hosting applications on dedicated servers maintained by a third-party provider
   C. Running software applications locally on individual computers
   D. Renting computing resources over the internet on a pay-as-you-go basis (2 marks)

13. Which one of the following **BEST** explains what grid computing involves?
   A. Distributing computing tasks across multiple machines
   B. Centralising all computing tasks on a single server
   C. Using physical grids to power data centers
   D. Storing data in a grid pattern (2 marks)

14. Which one of the following is **NOT** a cloud service provider?
   A. Amazon Web Services (AWS)
   B. Google Cloud Platform (GCP)
   C. Microsoft Windows
   D. IBM Cloud (2 marks)

15. Which Azure service allows developers to add artificial intelligence capabilities such as vision and language understanding to their applications?
   A. Azure Virtual Machines
   B. Azure Blob Storage
   C. Azure App Service
   D. AzurCognitive Services (2 marks)

16. Which one of the following **BEST** explains the utility computing as used in cloud data solutions?
    A. Charging for computing resources based on usage
    B. Prepaid subscription models
    C. Fixed monthly fees regardless of usage
    D. Free access to computing resources (2 marks)

17. What is SQL insights used for in the context of monitoring Azure SQL database?
    A. Managing database schema
    B. Monitoring CPU and I/O resources
    C. Analysing query performance
    D. Creating database backups (2 marks)

18. What is a SAS token used for in Azure storage?
    A. Server authentication system
    B. Shared access signature
    C. Secure authorisation service
    D. Storage access security (2 marks)

19. Which one of the following Azure service is suitable for storing and retrieving large amounts of unstructured data, such as images and videos?
    A. Azure Data Factory
    B. Azure SQL Database
    C. Azure Blob Storage
    D. Azure App Service (2 marks)

20. What differentiates Microsoft Azure from other cloud computing platforms?
    A. Exclusive focus on gaming services
    B. Specialisation in social media applications
    C. Limited support for programming languages
    D. Comprehensive set of integrated services (2 marks)

21. What term is commonly used to describe the ability to scale computing resources up or down based on demand in cloud computing?
    A. Elasticity
    B. Flexibility
    C. Rigidity
    D. Inflexibility (2 marks)

22. In cloud computing, what is the purpose of a virtual machine?
    A. To store large datasets
    B. To provide on-demand access to computing resources
    C. To represent a physical server in a virtualised environment
    D. To manage network traffic (2 marks)

23. What is the primary advantage of virtualisation in cloud computing?
    A. Enhanced security
    B. Improved network performance
    C. Increased software compatibility
    D. Reduced hardware costs (2 marks)

24. Which one of the following is **NOT** a type of cloud server?
    A. Public Cloud Servers
    B. Private Cloud Servers
    C. Dedicated Cloud Servers
    D. Merged Cloud Servers (2 marks)

25. How does Azure SQL Database differ from Azure Cosmos DB?
    A. Azure SQL Database is a NoSQL database, while Cosmos DB is relational
    B. Cosmos DB is a fully managed relational database service and supports only structured data
    C. SQL Database supports only structured data, while Cosmos DB supports multiple data models
    D. Azure SQL Database is designed for real-time analytics (2 marks)

26. What is the primary purpose of Azure Virtual Machines?
    A. Running virtualised workloads
    B. Hosting web applications
    C. Running containerised applications
    D. Providing scalable object storage (2 marks)

27. What is the purpose of Azure data factory?
    A. Storing unstructured data for analysis purpose
    B. Orchestrating and automating data workflows
    C. Real-time analytics on streaming data
    D. Building machine learning models (2 marks)

28. Which one of the following is a characteristic of a public cloud?
    A. Limited scalability
    B. High level of control
    C. On-premises infrastructure
    D. Pay-as-you-go pricing (2 marks)

29. You need to design a solution to process and analyse large sets of streaming data. Which Azure service would you use and why?
    A. Azure data factory, for data orchestration
    B. Azure SQL database, for real-time analytics
    C. Azure stream analytics, for processing streaming data
    D. Azure Databricks, for big data analytics (2 marks)

30. What is the primary data storage format used in Azure data lake storage?
    A. JSON
    B. Avro
    C. CSV
    D. Parquet (2 marks)

31. Ten-Ten Corp. needs a scalable and cost-effective compute service for running complex data analytics workloads. Which Azure service should they use for this purpose?
    A. Azure Virtual Machines
    B. Azure Functions
    C. Azure Databricks
    D. Azure Kubernetes Service (AKS) (2 marks)

32. What is the purpose of a Content Delivery Network in cloud computing?
    A. Ensuring data privacy
    B. Distributing content closer to end-users
    C. Managing virtual networks
    D. Handling database transactions (2 marks)

33. How does Azure security center contribute to enhancing the security of Azure SQL server database?
    A. By providing real-time threat detection and alerts
    B. By managing access control policies for database users
    C. By optimising database performance and resource utilisation
    D. By encrypting data at rest and in transit (2 marks)

34. _____ refers to the ability of a system to recover from failures and continue functioning?
    A. Resilience
    B. Scalability
    C. Elasticity
    D. Virtualisation (2 marks)

35. How does Azure Storage handle data redundancy and availability?
    A. Azure storage does not provide redundancy
    B. Through replication across multiple data centers
    C. By compressing and deduplicating data
    D. By encrypting data at rest (2 marks)

36. Which one of the following is **NOT** a component of network security for Azure SQL server database?
A. Firewall
B. Access management
C. Authentication
D. Row-level security (2 marks)

37. Which Azure service would you recommend to a global manufacturing company in need of implementing a data analytics solution on Microsoft Azure to visualise data and gain insights?
A. Power BI
B. Azure Analysis Services
C. Azure Data Factory
D. Azure Data Explorer (2 marks)

38. Which cloud deployment model involves cloud resources shared among multiple customers over the internet?
A. Private Cloud
B. Public Cloud
C. Hybrid Cloud
D. Community Cloud (2 marks)

39. Which one of the following is a major security concern in cloud computing?
A. Limited accessibility
B. Data encryption
C. Vendor lock-in
D. High availability (2 marks)

40. What is the purpose of data encryption in cloud computing?
A. It used for resource usage authentication
B. Converts cipher-text into plain-text
C. Ensuring data security and privacy
D. Accelerating data transfer speed (2 marks)

41. What term is used to describe the practice of moving data, applications or services from on-premises infrastructure to the cloud?
A. Cloud shifting
B. On-premises migration
C. Hybrid transition
D. Cloud onboarding (2 marks)

42. Acorn Retail is a large retail chain looking to transfer its IT infrastructure to the cloud to improve scalability, reduce costs and enhance agility. Which Azure service should Acorn Retail use to transfer their virtual machines from on-premises to Azure?
A. Azure Site Recovery
B. Azure Migrate
C. Azure Database Migration Service
D. Azure App Service Migration Assistant (2 marks)

43. _____ as a Service (DaaS) is a cloud computing service model where data storage services are provided over the internet.
A. Database
B. Disk
C. Data
D. Datacenter (2 marks)

44. _____ provides secure, site-to-site and point-to-site connectivity to Azure virtual networks and on-premises networks.
A. Azure Virtual Network
B. Azure ExpressRoute
C. Azure Traffic Manager
D. Azure VPN Gateway (2 marks)

45. Which one of the following is an example of a SaaS application?
    A. Amazon Web Services
    B. Microsoft Office 365
    C. Google Cloud Platform
    D. VMware (2 marks)

46. Why is vulnerability assessment important for Azure SQL server database security management?
    A. To identify potential security weaknesses and prevent data breaches
    B. To optimise database performance and resource utilisation
    C. To encrypt sensitive data stored in the database
    D. To monitor and analyse SQL auditing logs for suspicious activities (2 marks)

47. _____ is the process of distributing incoming network traffic across multiple servers or resources to optimise performance, reliability and availability.
    A. Data synchronisation
    B. Load balancing
    C. Traffic shaping
    D. Bandwidth throttling (2 marks)

48. What is the purpose of Azure Key Vault in the context of data security?
    A. Storing cryptographic keys
    B. Executing complex SQL queries
    C. Orchestrating data workflows
    D. Managing unstructured data (2 marks)

49. Which Azure service is used for managing and orchestrating containerised applications without directly managing the underlying infrastructure?
    A. Azure Container Instances
    B. Azure Service Fabric
    C. Azure Container Registry
    D. Azure Kubernetes Service (2 marks)

50. What Azure service provides a managed platform for building, deploying and scaling Artificial Intelligence models?
    A. Azure Data Factory
    B. Azure Databricks
    C. Azure Machine Learning
    D. Azure Cognitive Services (2 marks)

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DIPLOMA IN DATA MANAGEMENT AND ANALYTICS (DDMA)

LEVEL III

CLOUD DATA SOLUTIONS

TUESDAY: 22 August 2023. Morning Paper. **Time Allowed: 2 hours.**

Answer ALL questions by indicating the letter (A, B, C or D) that represents the correct answer. This paper is made up of fifty (50) Multiple Choice Questions. Each question is allocated two (2) marks.

1. What is the term used to describe the process of moving data from on-premises systems to the cloud?
   A. Data transfer
   B. Data synchronisation
   C. Data migration
   D. Data replication (2 marks)

2. Azure Backup automatically allocates and manages backup storage. Which of the following is its purpose in Azure SQL?
   A. Restoring the database to a previous state
   B. Creating a copy of the database for testing purposes
   C. Exporting the database to another Azure region
   D. Upgrading the database to a higher performance tier (2 marks)

3. Which Azure service is optimised for big data analytics and supports both structured and unstructured data?
   A. Azure Blob Storage
   B. Azure Cosmos DB
   C. Azure SQL Database
   D. Azure Data Lake Storage (2 marks)

4. What is the term used to describe the ability of a cloud system to automatically adjust its resources based on workload fluctuations?
   A. Scalability
   B. Elasticity
   C. Virtualisation
   D. Abstraction (2 marks)

5. Which Azure service would you use to deploy and manage containers in a scalable and orchestrated manner?
   A. Azure Kubernetes Service (AKS)
   B. Azure Container Instances (ACI)
   C. Azure Container Registry (ACR)
   D. Azure Service Fabric (2 marks)

6. What is the term used to describe the process of extracting useful insights from large and complex data sets?
   A. Data migration
   B. Data warehousing
   C. Data integration
   D. Data analytics (2 marks)

7. A serverless computing service that runs the code in the cloud without the need to manage infrastructure and enable an individual to focus on writing the application logic is known as?
   A. Oracle Cloud Infrastructure
   B. Google cloud
   C. Azure Functions
   D. AWS Lambda (2 marks)

8. A cloud computing service model that offers the highest level of abstraction to its users is known as?
   A. Software as a Service (SaaS)
   B. Platform as a Service (PaaS)
   C. Infrastructure as a Service (IaaS)
   D. Function as a Service (FaaS) (2 marks)

9. Which of the following statement **BEST** describes cloud data solution?
   A. A system for storing data on physical servers
   B. A platform for managing and analysing data in the cloud
   C. A software for encrypting data during transmission
   D. A technique for compressing data to reduce storage costs (2 marks)

10. What is managed cloud database security?
   A. A security system that protects physical servers
   B. A security system that prevents unauthorised access to internet routers
   C. A security system that protects software applications
   D. A security system that protects data stored in the cloud (2 marks)

11. Which Azure service would you use to process and analyse large volumes of streaming data in real-time?
   A. Azure Event Hubs
   B. Azure Functions
   C. Azure Stream Analytics
   D. Azure Logic Apps (2 marks)

12. A cloud service model provides the highest level of control and customisation over the underlying infrastructure is known as?
   A. Infrastructure as a Service (IaaS)
   B. Platform as a Service (PaaS)
   C. Software as a Service (SaaS)
   D. Function as a Service (FaaS) (2 marks)

13. Which cloud computing deployment model provides services to multiple organisations?
   A. Private cloud
   B. Hybrid cloud
   C. Public cloud
   D. Community cloud (2 marks)

14. Which of the following is a characteristic of cloud data storage?
   A. Limited scalability
   B. High upfront costs
   C. Physical infrastructure management
   D. Pay-as-you-go pricing (2 marks)

15. Which Microsoft Azure service provides a managed relational database solution?
   A. Azure SQL Database
   B. Azure Blob Storage
   C. Azure Cosmos DB
   D. Azure Data Lake Storage (2 marks)

16. A general term for cloud computing services that provide access to a broad range of resources, including computing, storage, networking, databases, analytics, and intelligence is?
   A. Platform as a service(PaaS)
   B. Infrastructure as a service (IaaS)
   C. Anything as a service(XaaS)
   D. Software as a service (SaaS) (2 marks)

17. Which of the following is **NOT** a potential security risk in a managed cloud database?
   A. Unauthorised access
   B. Server hardware failure
   C. Data breaches
   D. Malware attacks (2 marks)

18. Which of the following Azure components correctly matches with the Azure service responsible for monitoring and diagnosing the health of applications and infrastructure?
    A. Azure Service Health
    B. Azure Advisor
    C. Azure DevOps
    D. Azure Monitor (2 marks)

19. Which component of a cloud data solution enables real-time data streaming and processing?
    A. Data warehouse
    B. Data pipeline
    C. Data lake
    D. Data catalog (2 marks)

20. Which of the following statements **BEST** describes Azure DevOps?
    A. A cloud-based service for managing source code repositories and version control
    B. An AI-powered service for building, deploying, and managing applications
    C. A service for automating the deployment of applications and infrastructure
    D. A cloud-based service for managing and deploying containers (2 marks)

21. A group of data centers located within a specific region that are connected by high-speed, low-latency network links are referred to as?
    A. Server farm
    B. Server firm
    C. Availability zones
    D. Data center (2 marks)

22. Cloud security is a collection of procedures and technology designed to address external and internal threats to business security. The primary concern of cloud computing security is?
    A. Data loss due to hardware failure
    B. Unauthorised access to sensitive data
    C. Internet connectivity issues
    D. Incompatibility with legacy systems (2 marks)

23. Which Azure service is used for managing and securing user identities?
    A. Azure AD B2C
    B. Azure AD Domain Services
    C. Azure Active Directory (AAD)
    D. Azure AD Privileged Identity Management (2 marks)

24. What is multi-factor authentication (MFA) in the context of managed cloud database security?
    A. A method of using multiple cloud service providers for redundancy
    B. A method of requiring users to provide multiple credentials for authentication
    C. A method of encrypting data at rest and in transit
    D. A method of preventing distributed denial-of-service (DDoS) attacks (2 marks)

25. What is the purpose of load balancing in cloud computing?
    A. Securing data during transmission
    B. Managing virtual machine instances
    C. Optimising data storage efficiency
    D. Ensuring high availability and scalability (2 marks)

26. A popular open-source hypervisor used for virtualisation in cloud computing environments is known as?
    A. XEN
    B. VMWare
    C. VirtuaBox
    D. KVM (2 marks)

27. Which cloud computing characteristic ensures that users can access their applications and data from anywhere?
    A. On-demand self-service
    B. Broad network access
    C. Resource pooling
    D. Rapid elasticity (2 marks)

28. Which command is used to modify the structure of an existing Azure SQL table?
    A. CREATE TABLE
    B. DROP TABLE
    C. TRUNCATE TABLE
    D. ALTER TABLE (2 marks)

29. What is the primary purpose of Azure SQL Elastic Pools?
    A. Partitioning data across multiple Azure SQL Databases
    B. Scaling up and down the compute resources of Azure SQL Database
    C. Creating a backup and restore strategy for Azure SQL Database
    D. Enabling high availability and fault tolerance for Azure SQL Database (2 marks)

30. Which technology allows for processing of large-scale data sets in parallel across a distributed network of computers?
    A. Virtualisation
    B. Big Data analytics
    C. MapReduce
    D. Blockchain (2 marks)

31. An Azure service that can be used to enforce security policies, monitor resources for security vulnerabilities, and provide recommendations for improving security is known as?
    A. Azure Security Center
    B. Azure Active Directory
    C. Azure Key Vault
    D. Azure Firewall (2 marks)

32. Which cloud computing technology allows multiple virtual machines to run on a single physical machine?
    A. Container
    B. Microservice
    C. Load balancer
    D. Hypervisor (2 marks)

33. A set of metrics and guarantees related to the performance and reliability of cloud services is referred to as?
    A. Throughput
    B. Quality of Service (QoS)
    C. Latency
    D. Time To Live (TTL) (2 marks)

34. What is the common practice for securing data in transit in cloud computing?
    A. Implementing strong access controls for data storage
    B. Regularly backing up data to a secondary cloud provider
    C. Encrypting data using SSL/TLS protocols
    D. Assigning unique IP addresses to virtual machines (2 marks)

35. Which of the following is **NOT** a responsibility of the cloud service provider (CSP) in terms of security management in cloud computing?
    A. Data encryption
    B. Physical security of data centers
    C. Patch management for cloud resources
    D. Application-level security (2 marks)

36. SQL Insights in Azure is **BEST** described by which of the following statements?
    A. A monitoring tool for Azure SQL Database
    B. A data visualisation tool for Azure Blob Storage
    C. A query optimisation tool for Azure Cosmos DB
    D. A security monitoring tool for Azure Data Lake (2 marks)

37. Which of the following statements is **TRUE** about Microsoft Azure?
    A. It is an operating system developed by Microsoft
    B. It is a cloud computing platform and service provided by Microsoft
    C. It is a database management system developed by Microsoft
    D. It is a programming language developed by Microsoft (2 marks)

38. What is the purpose of Azure SQL Data Warehouse?
    A. Providing automatic backups and point-in-time restore capabilities for databases
    B. Enabling real-time analytics on streaming data
    C. Storing and processing large volumes of structured and unstructured data
    D. Replicating databases across multiple Azure regions (2 marks)

39. What is the term used to describe the physical location where cloud service providers store and manage data?
    A. Cloud cluster
    B. Data center
    C. Cloud hub
    D. Server farm (2 marks)

40. Which cloud security measure helps protect data by encrypting it while in transit?
    A. Firewall
    B. Intrusion Detection System (IDS)
    C. Virtual Private Network (VPN)
    D. Identity and Access Management (IAM) (2 marks)

41. What service can you use in Azure to automatically scale your application based on demand?
    A. Azure Virtual Machine Scale Sets
    B. Azure Functions
    C. Azure App Service
    D. Azure Container Scale Instances (2 marks)

42. Which of the following is **NOT** a characteristic of cloud computing?
    A. On-demand self-service
    B. Limited scalability
    C. Broad network access
    D. Resource pooling (2 marks)

43. The principle of least privilege in the context of managed cloud database security can be defined as?
    A. Giving users unlimited access privileges to the database
    B. Assigning the same access privileges to all users
    C. Limiting user access rights to only what is necessary for their roles
    D. Disabling all security measures to simplify access (2 marks)

44. What does the DELETE FROM command do in Azure SQL?
    A. Deletes the entire table
    B. Deletes columns from a table
    C. Deletes indexes from a table
    D. Deletes specific rows from a table (2 marks)

45. Which Azure service provides a fully managed NoSQL database for globally distributed applications?
    A. Azure SQL Database
    B. Azure Cosmos DB
    C. Azure Storage
    D. Azure Data Factory (2 marks)

46. Which of the following is a best practice for securing a managed cloud database?
    A. Regularly applying security patches and updates
    B. Using weak passwords for database access
    C. Disabling encryption to improve performance
    D. Allowing unrestricted access to the database from any IP address (2 marks)

47. Which tool can you use to visualise and analyse performance data captured by SQL Insights?
    A. Azure Monitor
    B. Azure Data Factory
    C. Azure SQL Data Warehouse
    D. Azure Data Studio (2 marks)

48. What is the main difference between horizontal scaling and vertical scaling in cloud computing?
    A. Horizontal scaling adds more resources to a single server, while vertical scaling adds more servers
    B. Horizontal scaling is more expensive than vertical scaling
    C. Horizontal scaling adds more servers, while vertical scaling increases the capacity of a single server
    D. Vertical scaling is only applicable in private cloud environments (2 marks)

49. Which security control helps protect cloud resources from unauthorised access by filtering network traffic based on predefined rules?
    A. Identity and Access Management (IAM)
    B. Firewall
    C. Virtual Private Network (VPN)
    D. Intrusion Detection System (IDS) (2 marks)

50. Which cloud computing technology allows for the automatic allocation and release of resources based on demand?
    A. Virtualisation
    B. Containerisation
    C. Load balancing
    D. Autoscaling (2 marks)

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DIPLOMA IN DATA MANAGEMENT AND ANALYTICS (DDMA)

LEVEL III

CLOUD DATA SOLUTIONS

TUESDAY: 25 April 2023. Morning Paper. **Time Allowed: 2 hours.**

Answer ALL questions by indicating the letter (A, B, C or D) that represents the correct answer. This paper is made up of fifty (50) Multiple Choice Questions. Each question is allocated two (2) marks.

1. The type of computing where different services such as servers, storage and applications are delivered to an organisation's computers and devices through the internet is referred to as?
   A. End user computing
   B. Client server computing
   C. Cloud computing
   D. Back end computing

2. Which of the following is the type of cloud computing service which provides the user with virtual infrastructure for example servers and data storage space?
   A. Infrastructure as a Service
   B. Platform as a Service
   C. Software as a Service
   D. Network as a Service

3. The type of cloud deployment model where services and infrastructure are provided to various clients free of charge or at a minimal fee is referred to as?
   A. Private cloud
   B. Public cloud
   C. Hybrid cloud
   D. Community cloud

4. Which of the following is **NOT** a characteristic of cloud computing?
   A. Simplified backing up and recovery of data
   B. Uses minimal resources thus saving energy
   C. Quick deployment and ease of integration
   D. Reduces the organisations backlog of work

5. With reference to cloud computing technologies, which of the following is **NOT** a type of virtualisation?
   A. Hardware virtualisation
   B. Software virtualisation
   C. Data virtualisation
   D. Storage virtualisation

6. Which of the following types of machines is **NOT** classified as a component of grid computing?
   A. Control node
   B. Provider
   C. Supply node
   D. User

7. Which of the following is a low-level physical protection used by Azure to protect data at rest and in transit, ensuring that it cannot be read or accessed by unauthorised parties?
   A. Biometric authentication
   B. Auditing
   C. Encryption
   D. Virtual Networking

8. Which Azure service is used for relational database management?
   A. Azure SQL Database
   B. Azure Functions
   C. Azure Cosmos DB
   D. Azure HDInsight

9. Which of the following is Azure serverless solution?
   A. Cloud functions
   B. Azure functions
   C. Azure monitor
   D. Azure CLI

10. Which of the following is **NOT** a task done when creating and managing virtual machines?
   A. Provisioning virtual machines in Azure
   B. Configuring virtual machine settings
   C. Implementing identity management
   D. Managing virtual machine disks

11. The Virtual Hard Disk (VHD) used as a template for creating a new Azure VM is called:
   A. Image
   B. Docker
   C. Container
   D. Disk

12. Which of the following statement best describes Azure AD in the context of cloud computing?
   A. A database service
   B. An identity management service
   C. A virtual machine services
   D. A storage services

13. Which of the following is a cloud-based data integration solution?
   A. Amazon QuickSight
   B. Apache Spark
   C. Apache NiFi
   D. Snowflake

14. Which of the following describes the difference between Azure Resource Manager (ARM) and Azure Service Management (ASM)?
   A. ARM is a newer version of ASM
   B. ARM is used for managing IaaS resources, while ASM is used for managing PaaS resources
   C. ARM is used for managing PaaS resources, while ASM is used for managing IaaS resources
   D. ARM and ASM are the same thing

15. The cloud-based network security service provided by Microsoft Azure that provides filtering for incoming and outgoing network traffic is called:
   A. Azure Key Vault
   B. Azure Firewall
   C. Multi-factor authentication
   D. Azure DDoS Protection

16. Which of the following is the type of cloud computing technology that provides on-demand computing resources and infrastructure based on the pay per use method?
   A. Grid computing
   B. Utility computing
   C. End user computing
   D. Web computing

17. Which of the following is **NOT** a type of Azure storage account?
    A. Standard general-purpose
    B. Premium block blobs
    C. Premium file shares
    D. Premium database shares

18. Which of the following is a type of service endpoint available for an Azure storage account?
    A. Standard endpoints
    B. Azure SND zone endpoints
    C. Azure complex endpoints
    D. Azure subscription

19. Which of the following does **NOT** provide a relational database service for cloud and enterprise applications?
    A. Azure SQL Managed Instance
    B. Microsoft Azure SQL Database
    C. Azure Synapse Analytics
    D. Azure virtual network

20. _____ refers to the authentication of a user when connecting to Azure SQL Database or Azure SQL Managed Instance using username and password.
    A. SQL authorisation
    B. SQL authentication
    C. SQL logins
    D. SQL auditing

21. Which of the following is a cloud-based enterprise resource planning (ERP) and customer relationship management (CRM) software?
    A. SharePoint
    B. SQL Server
    C. Dynamic 365
    D. Email

22. When building cloud-based solutions with Microsoft Azure, which step is concerned with choosing the appropriate architecture and design patterns that best meet your requirements?
    A. Planning
    B. Managing
    C. Implementing
    D. Designing

23. The methodology of providing fine-grained control over the operations and scope with which a user can perform a control-plant action introduced by Microsoft is called:
    A. Classic
    B. Resource manager
    C. RBAC
    D. VMM

24. In cloud computing, a simulated computing environment that runs on a cloud service provider's infrastructure is called:
    A. VMWare
    B. Virtual Machine
    C. Snapshot
    D. Container

25. Select the cloud computing model below that enables developers to run their code, without having to worry about the underlying infrastructure.
    A. IaaS
    B. PaaS
    C. SaaS
    D. FaaS

26. Which of the following is **NOT** a cloud database security best practice?
    A. Recognise your model of shared responsibility
    B. Probe public cloud vendors about the security mechanisms and processes
    C. Create and implement cloud security policies
    D. Create and implement data scalability policies

27. The type of cloud database threat where hackers get forced access to sensitive data stored in the cloud environment and use it for their benefit is referred to as:
    A. Data breach
    B. Account hijacking
    C. Data loss
    D. Data phishing

28. Which of the following is Azure cloud development tool?
    A. Azure Container Instances
    B. Azure Kubernetes Service
    C. Visual Studio
    D. Azure HDInsight

29. What is the purpose of a database index in Azure?
    A. To speed up the query process
    B. To store a copy of the database data
    C. To slow down the query process
    D. To enforce data integrity and consistency

30. A cloud service provider is a company offering internet-based services such as storage, computing power and application hosting. Which of the following is **NOT** a cloud service provider?
    A. Amazon web services
    B. Google cloud
    C. Microsoft Azure
    D. Cloud security alliance

31. Which of the following **CANNOT** be quickly identified by Query performance insight in Azure SQL database?
    A. What the longest running queries are
    B. How the queries change over time
    C. The waits that are affecting the queries
    D. Trends for query waits

32. Which of the following methods can be used to create a custom telemetry trace signal in Azure?
    A. LOGMESSAGE method
    B. Verbosity method
    C. EventID method
    D. TelemetryScope method

33. _____is a data ingestion service in Azure which streams a huge count of messages from any source to provide an immediate response to business challenges.
    A. Azure event hub
    B. Azure event grid
    C. Azure event portal
    D. Azure service hub

34. Which of the following is **NOT** an Azure best practice for logically segmenting subnets?
    A. Don't assign allow rules with broad ranges
    B. Segment the larger address space into subnets
    C. Create network access controls between subnets
    D. Enable subnet access only after workflow approval

35. Which Azure storage option is best for storing messages that will be retrieved and processed asynchronously by multiple consumers?
    A. Azure Blob Storage
    B. Azure Table Storage
    C. Azure Queue Storage
    D. Azure File Storage

36. Choose the virtualisation layer below which is used to execute the library functions.
    A. Application binary interface
    B. Applications programming interface
    C. Instruction set architecture
    D. Micro instruction architecture

37. The cloud computing technique used to simplify the provisioning, configuration, and deployment of cloud resources is referred to as:
    A. Automation
    B. Virtualisation
    C. Multi-tenancy
    D. Resource-pooling

38. Security should be core in implementing a cloud data network solution. Select the correct cloud-based service for securely storing and managing cryptographic keys, certificates, and secrets as used in Azure cloud security.
    A. Azure Disk Encryption
    B. Azure Key Vault
    C. Azure Active Directory (AD)
    D. Azure AD Domain Services

39. Which type of data storage in Azure, is used to store unstructured data such as images, videos, and documents?
    A. Azure Blob Storage
    B. Azure SQL Database
    C. Azure containers Instances
    D. Managed disks

40. Purchasing a server with more cores to satisfy a performance need of your business is referred to as:
    A. Scaling-in
    B. Scaling-up
    C. Scaling-out
    D. Scaling-through

41. Which of the following is **NOT** an advantage of native apps as used in cloud computing?
    A. Ability to work offline
    B. Visibility to potential customers
    C. Push notifications for real time
    D. Limited reach

42. Which of the following cloud computing service, is used to provide virtualised computing resources?
    A. SaaS
    B. PaaS
    C. IaaS
    D. BaaS

43. Which of the following statements is **INCORRECT** as used in cloud computing?
    A. Virtual Private Cloud (VPC) is a virtual network in the cloud
    B. Elasticity is the cloud computing architecture that allows multiple customers to share the same infrastructure
    C. A container is cloud computing service that provides a platform for deploying and managing containers
    D. A Docker is a virtualised computing environment that runs on a cloud service provider's infrastructure

44. Cloud computing virtualisation technology that hosts a desktop operating system on a virtual machine is called:
    A. Virtualisation
    B. Serverless computer
    C. Virtual Desktop Infrastructure
    D. Virtual Machine

45. Which of the following is a cloud data solution tool that offers the cloud storage services?
    A. Google BigQuery
    B. Amazon S3
    C. Google cloud storage
    D. Amazon S3 and google cloud storage

46. Which of the following describes Azure Cosmos DB?
    A. A relational database service.
    B. An in-memory database service
    C. A cloud storage solution
    D. A NoSQL database service

47. _____ provides control and features such as pausing computational tasks in order to efficiently manage costs.
    A. Azure synapse
    B. Azure SQL
    C. Azure analytics
    D. Azure Power BI

48. Which of the following is **NOT** an option offered by Microsoft Azure Cloud to deploy Microsoft SQL server on Azure?
    A. SQL Server on Azure VM (IaaS)
    B. Azure SQL Database (PaaS)
    C. Azure SQL Managed Instance (PaaS)
    D. Azure Synapse (SaaS)

49. Which of the following is **NOT** an option offered by Windows Azure for handling the interactions between two apps?
    A. Message Queues
    B. Data bus
    C. Multifactor Access
    D. Software Development Kit

50. Which of the following in Windows Azure does **NOT** provide an interactive interface to monitor the statistics related to the performance of virtual machine?
    A. CPU percentage
    B. Memory percentage
    C. Disk Read Bytes/sec
    D. Disk Write Bytes/sec

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DIPLOMA IN DATA MANAGEMENT AND ANALYTICS (DDMA)

LEVEL III

CLOUD DATA SOLUTIONS

TUESDAY: 6 December 2022. Morning Paper. **Time Allowed: 2 hours.**

Answer ALL questions by indicating the letter (A, B, C or D) that represents the correct answer. This paper is made up of fifty (50) Multiple Choice Questions. Each question is allocated two (2) marks.

1. A software entity that is used to represent resources and capabilities in a network to receive request from a client and return a response is referred to as:
   A. Data
   B. Service
   C. Query
   D. Application

2. The following are business continuity strategies **EXCEPT**?
   A. Virtualisation
   B. High availability
   C. Backup
   D. Disaster recovery

3. Which of the following is a customer managed service of the Azure that gives the client full control over the application hosting?
   A. Virtual Machine
   B. Functions
   C. Service Fabric
   D. App Service

4. For secure data in the cloud, security laws should be implemented. Which of the following is concerned with the control of the data entered into the system?
   A. Back up and security law
   B. Validation of input
   C. Processing law
   D. Output verification

5. Choose the correct phases involved in cloud architecture.
   A. Launch-Monitor-Shutdown-Cleanup
   B. Monitor-Launch-Shutdown-Cleanup
   C. Cleanup-Monitor-Launch-Shutdown
   D. Monitor-Shutdown-Cleanup-Launch

6. Which of the following is **NOT** an access management functionality as used in cloud data solutions?
   A. Authorisation
   B. Authentication
   C. Row-level security
   D. Firewall

7. In cloud data solutions, cloud service models offer different services. In which cloud service model does Microsoft Azure belong to?
   A. PaaS
   B. IaaS
   C. SaaS
   D. FaaS

8. In cloud computing, services can be relinquished to third parties to allow systems to span boundaries of many organisations and cross security borders through a process called?
   A. Mitigation
   B. Virtualisation
   C. Deperimeterisation
   D. Networking

9. What name is given to cloud computing intermediary that provides connectivity and transport services between the service providers and the service consumers in a cloud data-based implementation?
   A. Service provider
   B. Broker
   C. Carrier
   D. Regulator

10. All the following are the services offered by the tenant when using virtual machine in Azure **EXCEPT**?
   A. Provisioning
   B. OS patches
   C. Configuration
   D. Software installation

11. Identify a cloud computing resource from the list provided below?
   A. Resource virtualisation
   B. Distributed infrastructure
   C. Storage servers
   D. Community cloud

12. Company XYZ plan to adopt cloud computing in running the business operation. Which of the following is **NOT** a disadvantage of cloud computing adoption that the company may face upon the adoption of the cloud technology?
   A. Data confidentiality compromise
   B. Economy of scale
   C. Vendor lock-in
   D. Data transfer bottleneck

13. Which of the following is **NOT** a component of Windows Azure?
   A. Fabric controller
   B. Storage
   C. Compute
   D. SQL Azure

14. The name given to entire information storage objects, containers and types that exist statically on physical media, such as the magnetic or optical disk is?
   A. Cloud
   B. Database
   C. At-rest
   D. In-transit

15. Allan plans to map a network drive from several computers that run Windows 10 to Azure Storage. He needs to create a storage solution in Azure for the planned mapped drive. What should he create?
    A. An Azure SQL database
    B. A virtual machine data disk
    C. A Files service in a storage account
    D. A Blobs service in a storage account

16. What should be a **MAJOR** concern of any business entity that is considering to implement cloud computing solution to substitute its business processes?
    A. Cost
    B. Space
    C. Platforms
    D. Security

17. To build and run machine learning workflows, which of the following tools is used by data scientists and Artificial Intelligence developers in Azure Cloud?
    A. Azure Lake analytics
    B. Azure ML SDK
    C. Azure Databricks
    D. Azure Databox

18. Apple adopted a network-centric storage of contents such as music, video and movies on personal devices such as personal computers, laptops, tablets emulating the modern cloud computing. What name was given to the cloud?
    A. SmartCloud
    B. Azure
    C. iCloud
    D. AWS

19. A system administrator from a reputable company has a on-premises network that contains several servers. She plans to migrate all the servers to Azure. You need to recommend a solution to ensure that some of the servers are available if a single Azure data center goes offline for an extended period. What should she include in the recommendation?
    A. Fault tolerance
    B. Elasticity
    C. Scalability
    D. Low latency

20. Which of the following statements is **TRUE** as used in cloud data solutions?
    A. Data centers are factories that transforms and store bits
    B. Cloud Computing covers computing technology only
    C. A typical rack contains a single server
    D. A data center requires very little power supply

21. Choose the odd out benefit that an organization can gain by the adoption of cloud computing from the list shown below?
    A. Data security
    B. Vendor lock-in
    C. Insight
    D. Quality control

22. Which of the following statement is **NOT** true?
    A. There are four types of cloud computing
    B. Multitenancy is a feature of SaaS
    C. Internet is an optional requirement in cloud computing
    D. Hybrid is a combination of both public and private clouds

23. In which of the following scenarios does the snapshot **NOT** apply?
    A. Business devastating test
    B. Business data is saved for a long time
    C. Service patch upgrade
    D. Major changes in business

24. Which cloud computing vendor developed Azure cloud?
    A. IBM
    B. Microsoft
    C. Amazon
    D. Dell

25. The Azure immeasurable analytics service that brings together data integration, enterprise data warehousing and big data analytics is referred to as?
    A. Azure PowerBI
    B. Azure AutoML
    C. Azure HDinsight
    D. Azure Synapse

26. Which of the following is the organization that was formed to help nurture the security standards in cloud computing?
    A. Cloud Security Alliance
    B. Internet Architecture board
    C. Open Systems Interconnection
    D. Security in the cloud alliance

27. The Azure option that exists exactly for the purpose of giving a temporary access to an application is?
    A. Shared signature account
    B. Sheared key
    C. Digital certificate
    D. Azure AD user Account

28. Which of the following descriptions of the relationship between Host Machine and Guest Machine is correct?
    A. After using virtualisation technology, one Host Machine can only run many hypervisors.
    B. After using virtualisation technology, multiple guest machines can be run on one Host Machine
    C. After using virtualisation technology, a Guest Machine can use multiple Host Machine resources at the same time.
    D. After using virtualisation technology, a Guest Machine can only run on the Host Machine that created it.

29. Azure supports the following applications to interact with the learning service when training a machine learning model **EXCEPT**?
    A. Jupyter Notebooks
    B. VS code
    C. Java
    D. RStudio

30. In which form should data be transferred and stored in cloud computing for security purposes in a cloud computing environment?
    A. Compressed
    B. Zipped
    C. Encrypted
    D. As a signal

31. Which of the following descriptions about the Hypervisor are correct?
    A. Hypervisor is the key to computer virtualisation
    B. Hypervisor is virtualisation
    C. Hypervisor is essentially an operating system
    D. Hypervisor carries a lot of drivers, so Hypervisor does not need to install drivers and patches.

32. Which of the following statement is **TRUE** as used in Virtual machines?
    A. Azure charges a constant price for all the virtual machines
    B. Azure virtual machines can be used in one way
    C. The size of the virtual machine is determined by the workload you want to run
    D. When you use a Virtual machine, you lack control over the computing environment

33. The concept of commissioning and also decommissioning of a large amount of resource capacity in cloud network solutions is referred to as?
    A. Scalability
    B. Elasticity
    C. Provisioning
    D. Memory Commit

34. Virtual Box virtualisation software is an example of?
    A. Platform service
    B. Software service
    C. Infrastructure service
    D. Hardware service

35. Which of the statements below is the **MOST** appropriate to describe a public cloud as used in cloud deployment models?
    A. It is a dedicated server offered by the cloud service provider to a tenant
    B. The resources owned are entirely by a single company
    C. It employs private cloud service features such as processing confidential data
    D. The cloud provider owns all hardware and software

36. Which of the following is **NOT** a model found in Azure Compute component as used in Microsoft Azure?
    A. Virtual machine
    B. Storage service
    C. Cloud service
    D. Batch service

37. When a virtual machine on a physical host fails, it does not affect other virtual machines on the physical host. Which feature of virtualisation technology is this?
    A. Package
    B. Independence
    C. Partition
    D. Isolation

38. Which of the following options about the description of cloud computing on-demand self-service features is correct?
    A. After the user has determined the cloud computing service that he needs, he can complete the application of the cloud computing resource by himself.
    B. Cloud computing service providers only need to be ready to service all of the remaining work done entirely by the users themselves
    C. Users need to solve all the problems themselves in the process of using cloud computing.
    D. When users use cloud computing resources, they do not need to explain to the service provider at all.

39. A service contract asserting that when you deploy two or more role instances of a service on Azure, access to that cloud service is available for at minimum 99.9% of the time. What is the name of the contract?
A. Agreement
B. Azure policy
C. Azure SLA
D. Azure terms

40. A cloud-based authentication and authorisation service offered by Azure to enable a staff in an organization to sign in and access resources is christened?
A. Azure security
B. Azure AD
C. Azure CDN
D. Azure scenarios

41. Which big data streaming platform and event ingestion service is supported by Azure cloud?
A. Azure Event hub
B. Apache Kafka
C. Azure Synapse Analytics
D. Azure event grid

42. Which Azure storage service stores structured data without a schema?
A. Azure Table storage
B. Azure Blob storage
C. Azure Disk Storage
D. Azure Redis

43. The following is **NOT** considered as a major type of cloud computing usage?
A. Platform as a Service
B. Software as a Service
C. Hardware as a Service
D. Infrastructure as a Service

44. A cloud-based service that enables you to determine IP addresses and filter traffic to a virtual network in cloud computing is known as?
A. Firewall
B. VPN
C. Tunneling
D. Proxy

45. Which of the following is **NOT** true about containers as used in cloud computing?
A. Containers are often compared to virtual machines (VMs)
B. They allow packaging of your application together with libraries and other dependencies
C. Containers are more lightweight than VMs
D. Containers are more heavyweight than VMs

46. The cloud service purchased by the user contains the application running environment but there is no application and related data. This model formula belongs to?
A. SaaS
B. PaaS
C. Iaas
D. Naas

47. Which of the following types of disks can be recommended for archives and other scenarios that need to store large amounts of data for a long time and do not need to read frequently?
    A. SAS disk
    B. NL-SAS disk
    C. SATA disk
    D. SSD disk

48. Which **ONE** of the following is used to trace and assess the performance of applications that are under production in Azure?
    A. Logs analytics
    B. Audit trails
    C. Profilers
    D. Tracers

49. Which of the following is a business analytics service provided by Microsoft that lets you visualise your data and share insights?
    A. Data Analytics
    B. Data Visualisation
    C. Power BI
    D. Dash boarding

50. Choose the **CORRECT** description of virtualised storage and non-virtualised storage.
    A. Virtualised storage is more secure than non-virtualised storage
    B. Virtualised storage compatibility is better than non-virtualised storage
    C. The read and write performance of non-virtualised storage is better than virtualised storage.
    D. Non-virtualised storage is more scalable than virtualised storage

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