17680

BRAINWARE UNIVERSITY

Term End Examination 2025-2026
Programme – MCA-2024
Course Name – Cloud Computing
Course Code - MCA30113
(Semester III)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) What is the primary purpose of the Cloud Cube Model?

a) To categorize cloud networks based on their deployment models
b) To define the NIST reference model for cloud computing
c) To identify the boundaries of cloud services between providers and consumers
d) To categorize cloud networks based on their physical location, ownership, security boundary, and sourcing

(ii) Which of the following is used to aid in locating services in SOA?

a) Service Registry
b) Data Abstraction Services
c) Data Bus
d) All of the mentioned

(iii) Which of the following is a method for bidding on unused EC2 capacity based on the current spot price?

a) On-Demand Instance
b) Reserved Instances
c) Spot Instance
d) All of the mentioned

(iv) Indicate the correct algorithms used by Google to determine the importance of a particular page.

a) SVD
b) PageRank
c) FastMap
d) All of the mentioned

(v) Indicate how many essential characteristics exist in cloud computing according to the NIST definition.

a) 1
b) 3
c) 5
d) 7

(vi) Indicate how administrators can control access to AWS resources and implement security best practices.

a) Through AWS IAM
b) By using AWS Backup
c) Via AWS Auto Scaling
d) With AWS CloudWatch

(vii) Choose the correct language specification that is often used to model SLAs.

a) WSLA
b) ASLA
c) CSLA
d) DLSA

(viii) Identify the GCP service that is ideal for running fast SQL queries on large datasets and is suitable for business intelligence and data analytics.

a) BigQuery
b) Cloud Firestore
c) Cloud Pub/Sub
d) Cloud Datastore

(ix) Identify the role a hypervisor plays when a guest OS attempts to execute a privileged instruction in a virtualized environment.

a) It allows the guest OS to execute the instruction without any intervention
b) It traps the operation and enforces correctness and safety
c) It automatically increases the resources allocated to the guest OS
d) It shuts down the guest OS to prevent any security breaches

(x) Select the term that refers to abuse of the cloud.

a) Using cloud resources for legitimate purposes
b) Conducting nefarious activities from the cloud, such as launching DDoS attacks or distributing spam and malware
c) Efficiently managing cloud resources
d) Securely sharing data in the cloud

(xi) Analyze how interconnected computers in a cluster work together in cluster computing.

a) As independent systems
b) Sharing resources and performing parallel computing tasks
c) Sequentially processing tasks
d) As isolated nodes with no communication

(xii) Examine the protocol commonly used for streamed media scenarios due to its lower emphasis on fidelity.

a) Transmission Control Protocol (TCP)
b) User Datagram Protocol (UDP)
c) Hypertext Transfer Protocol (HTTP)
d) Simple Mail Transfer Protocol (SMTP)

(xiii) Inspect a potential security consideration introduced by virtualization in cloud computing.

a) Threat detection
b) API security
c) VM escape and isolation between VMs
d) Data migration

(xiv) What is the goal of Amazon EKS?

a) Extracting data from scanned documents
b) Simplifying the deployment of containerized applications
c) Providing online meeting and video conferencing services
d) Ensuring optimal resource utilization and cost efficiency

(xv) Choose the dimensions used by the Cloud Cube Model to categorize cloud networks.

a) Cost, Security, Integration, and Support
b) Physical Location, Ownership, Security Boundary, and Sourcing
c) Performance, Flexibility, Scalability, and Usability
d) Data Type, Application Type, User Access, and Vendor Lock-in

Group-B

(Short Answer Type Questions) 3 x 5=15

2. What are the main cloud service models, and how do they differ in terms of infrastructure management? (3)
3. Why is Peter Krogh's "3-2-1 Rule" recommend for backups? (3)
4. Apply security controls to mitigate cloud-specific threats like insecure APIs and multi-tenancy risks. (3)
5. Evaluate the benefits of workload distribution in a hybrid cloud environment in comparison with public or private cloud deployments. (3)
6. Propose a framework for managing cloud services across IaaS, PaaS, and SaaS models that addresses the limitations of traditional administration systems. (3)

OR

Develop an advanced SLA management system that ensures compliance and performance optimization in a multi-cloud environment. (3)

Group-C
(Long Answer Type Questions) 5 x 6=30

7. Explain Service Level Agreement (SLA). Describe its lifecycle in detail with the help of a diagram. (5)
8. Examine the architecture of WAP and describe the role of the WAP Gateway. (5)
9. Mention the benefits and limitations of using hypervisors for managing virtualized environments in cloud computing. (5)
10. Illustrate Cloud Cube Model with diagram and explain how does it categorize cloud networks based on different dimensions. (5)
11. What is distributed computing system? Explain various types of distributed computing system. (5)
12. Construct a comparative analysis of Virtual Appliances and Virtual Machines, highlighting their differences in functionality and deployment scenarios. (5)

OR

Discuss Compliance as a Service (CaaS) and discuss various data breach cases which suggest to adoption of CaaS. (5)

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