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**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA**

(An Autonomous Institute Affiliated to AKTU, Lucknow)

**MCA (Integrated)**

**SEM: IV - THEORY EXAMINATION (2024- 2025)**

**Subject: Cloud Computing**

**Time: 3 Hours**

**Max. Marks: 100**

**General Instructions:**

**IMP:** Verify that you have received the question paper with the correct course, code, branch etc.

1. This Question paper comprises of **three Sections -A, B, & C**. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.

2. Maximum marks for each question are indicated on right -hand side of each question.

3. Illustrate your answers with neat sketches wherever necessary.

4. Assume suitable data if necessary.

5. Preferably, write the answers in sequential order.

6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

**SECTION-A**

20

1. Attempt all parts:-

- 1-a. Which of the following is NOT a cloud computing service model?[CO1,K1] 1
- (a) Infrastructure as a Service (IaaS)
  - (b) Software as a Service (SaaS)
  - (c) Database as a Service (DBaaS)
  - (d) Personal Computing as a Service (PCaaS)
- 1-b. What was the first widely recognized cloud computing service launched by Amazon Web Services (AWS)?[CO1,K1] 1
- (a) Amazon EC2
  - (b) Amazon S3
  - (c) Amazon RDS
  - (d) Amazon CloudFront
- 1-c. Which term describes the process of running multiple operating systems simultaneously on a single physical machine?[CO2,K1] 1
- (a) Virtualization
  - (b) Hypervisor
  - (c) Containerization
  - (d) Consolidation
- 1-d. What is containerization?[CO2,K1] 1
- (a) A form of server virtualization

- (b) A method of running multiple containers on a single physical machine
  - (c) A type of network virtualization
  - (d) A technique for isolating and running applications without launching a separate virtual machine
- 1-e. What is a service-oriented architecture (SOA) governance?[CO3,K1] 1
- (a) A set of rules and policies for managing SOA implementation
  - (b) A software tool for monitoring network traffic
  - (c) A hardware component for hosting web services
  - (d) A programming language for developing service-oriented applications
- 1-f. What are the primary characteristics of RESTful systems?[CO3,K1] 1
- (a) Stateful and tightly coupled
  - (b) Stateless and loosely coupled
  - (c) Monolithic and decentralized
  - (d) Homogeneous and centralized
- 1-g. Which of the following is an example of a managed resource?[CO4,K1] 1
- (a) VM
  - (b) Dedicated server
  - (c) Local storage
  - (d) External hard drive
- 1-h. What is an unmanaged resource in cloud computing?[CO4,K1] 1
- (a) User-controlled
  - (b) Provider-controlled
  - (c) Shared
  - (d) Physical
- 1-i. During which stage of the cloud data lifecycle is data processed to extract meaningful insights?[CO5,K1] 1
- (a) Ingestion
  - (b) Storage
  - (c) Analysis
  - (d) Presentation
- 1-j. In the CIA triad, what does availability protect against in cloud computing?[CO5,K1] 1
- (a) Unauthorized access and disclosure of data
  - (b) Unauthorized modification of data
  - (c) Service disruptions and downtime
  - (d) Loss of data integrity

2. Attempt all parts:-

- 2.a. Explain different models for deployment in cloud computing? [CO1,K2] 2

2.b.	Define virtual machine (VM)?[CO2,K2]	2
2.c.	Explain the key principles of SOA?[CO3,K2]	2
2.d.	Name two key resources managed in cloud environments.[CO4,K1]	2
2.e.	Explain how does open security architecture contribute to cloud security practices?[CO5,K3]	2

## **SECTION-B** 30

3. Answer any five of the following:-

3-a.	Explain the issues with Cloud Computing? [CO1,K2]	6
3-b.	Explain the scalability in cloud computing with example?[CO1,K2]	6
3-c.	Explain the concept of live migration in virtualization?[CO2,K2]	6
3-d.	Explain the concept of containerization and its relationship with virtualization.[CO2,K2]	6
3.e.	Explain the concept of emergent behavior in Systems of Systems.[CO3,K2]	6
3.f.	Explain the concept of dynamic resource allocation in cloud computing.[CO4,K2]	6
3.g.	Summarize the concept of security governance and its importance in cloud security management?[CO5,K2]	6

## **SECTION-C** 50

4. Answer any one of the following:-

4-a.	Explain the types of clouds and their characteristics in cloud computing. [CO1,K1]	10
4-b.	Explain the difference between Scalability and Elasticity in Cloud Computing? [CO1,K2]	10

5. Answer any one of the following:-

5-a.	Explain the role of a hypervisor in virtualized environments and the types of hypervisors available. [CO2,K2]	10
5-b.	Describe a scenario where a company might benefit from implementing both server and desktop virtualization solutions.[CO2,K3]	10

6. Answer any one of the following:-

6-a.	Explain the concept of layered cloud architecture design. [CO3,K2]	10
6-b.	Explain how IaaS enables organizations to scale resources dynamically. [CO3,K3]	10

7. Answer any one of the following:-

7-a.	How does a Virtual Private Cloud (VPC) differ from traditional networking setups, and what advantages does it offer in terms of scalability and security?[CO4,K4]	10
7-b.	Elaborate the Domain Name System (DNS), and explain how is it integrated into a VPC to facilitate resource discovery and communication?[CO4,K4]	10

8. Answer any one of the following:-

8-a.	Suppose you are tasked with designing a security policy for a cloud-based application. How would you ensure it addresses confidentiality, integrity, and	10
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availability concerns effectively?[CO5,K4]

- 8-b. Describe some of the most prevalent cyber attacks targeting cloud environments, such as data breaches, DDoS attacks, insider threats, and misconfigurations.[CO5,K3] 10

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