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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 (2023- 2024)

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

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1. Attempt all parts:-

- 1-a. What does distributed computing refer to?[CO1] 1
- (a) Processing tasks sequentially on a single machine
 - (b) Sharing computing resources over a network of computers
 - (c) Using virtualization to optimize resource utilization
 - (d) Encrypting data for secure transmission
- 1-b. What is the main goal of parallel computing?[CO1] 1
- (a) To distribute tasks across multiple processors to improve performance
 - (b) To centralize computing resources for better management
 - (c) To reduce network latency in distributed systems
 - (d) To improve data security in cloud environments
- 1-c. What is virtualization?[CO2] 1
- (a) Running multiple operating systems on a single physical machine
 - (b) Running multiple virtual machines on a single physical machine
 - (c) Running a single operating system on multiple physical machines
 - (d) Running a single virtual machine on multiple physical machines
- 1-d. What is a hypervisor in virtualization?[CO2] 1
- (a) A hardware device used to secure virtual machines
 - (b) An operating system designed for virtualization
 - (c) A software layer that enables multiple virtual machines to run on a single physical

machine

- (d) A networking component used to connect virtual machines
- 1-e. What is a service-oriented architecture (SOA) governance?[CO3] 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. Which protocol is commonly used for communication between services in SOA?[CO3] 1
- (a) HTTP
- (b) FTP
- (c) SMTP
- (d) SSH
- 1-g. What is a managed resource in cloud computing?[CO4] 1
- (a) User-controlled
- (b) Provider-controlled
- (c) Shared
- (d) Physical
- 1-h. Which type of resource is more suitable for organizations with limited IT expertise?[CO4] 1
- (a) Managed
- (b) Unmanaged
- (c) Shared
- (d) Physical
- 1-i. During which stage of the cloud data lifecycle is data processed to extract meaningful insights?[CO5] 1
- (a) Ingestion
- (b) Storage
- (c) Analysis
- (d) Presentation
- 1-j. What type of attack involves an attacker intercepting communication between a user and a cloud service to steal sensitive information?[CO5] 1
- (a) Man-in-the-Middle (MitM) Attack
- (b) DDoS Attack
- (c) SQL Injection Attack
- (d) Cross-Site Scripting (XSS) Attack

2. Attempt all parts:-

- 2.a. What are some of the key features of Cloud Computing? [CO1] 2

- 2.b. How does virtualization benefit hardware utilization?[CO2] 2
- 2.c. Explain the concept of a service in SOA.[CO3] 2
- 2.d. What is resource management in cloud computing?[CO4] 2
- 2.e. What are some common attacks that target cloud environments?[CO5] 2

SECTION-B

30

3. Answer any five of the following:-

- 3-a. What do you mean by cloud delivery models? [CO1] 6
- 3-b. What are the advantages and disadvantages of serverless computing? [CO1] 6
- 3-c. What is the difference between full virtualization and paravirtualization?[CO2] 6
- 3-d. How does virtualization differ from traditional computing?[CO2] 6
- 3.e. How does SOA support service reusability and composability?[CO3] 6
- 3.f. Write the difference between object level and block level storage services.[CO4] 6
- 3.g. How does Identity and Access Management (IAM) contribute to cloud security?[CO5] 6

SECTION-C

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4. Answer any one of the following:-

- 4-a. Explain the Evolution of cloud computing. Also write the difference between Parallel computing and Distributed Computing. [CO1] 10
- 4-b. Discuss the concept of Multitenancy in Cloud and its importance in cloud computing? [CO1] 10

5. Answer any one of the following:-

- 5-a. Describe memory virtualization and its role in optimizing resource utilization. [CO2] 10
- 5-b. How does storage virtualization enhance data mobility and simplify storage management tasks?[CO2] 10

6. Answer any one of the following:-

- 6-a. What are the benefits of using IaaS for organizations with varying infrastructure needs? [CO3] 10
- 6-b. What is the NIST Cloud Computing Reference Architecture, and how does it influence layered cloud architecture design? [CO3] 10

7. Answer any one of the following:-

- 7-a. What strategies can be employed to optimize resource utilization in the cloud?[CO4] 10
- 7-b. How do you scale instances vertically and horizontally in EC2, Azure Virtual Machine, and Google Compute Engine?[CO4] 10

8. Answer any one of the following:-

- 8-a. Given a scenario, how would you implement multi-factor authentication for accessing cloud resources?[CO5] 10

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

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