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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**

**20**

**1. Attempt all parts:-**

- 1-a. What is cloud computing?[CO1] 1
- (a) A method of storing data on physical servers
  - (b) A technology that allows access to computing resources over the internet
  - (c) A type of software for managing virtual machines
  - (d) A method of data encryption for secure storage
- 1-b. Which of the following is a characteristic of cloud computing? [CO1] 1
- (a) Limited scalability
  - (b) Fixed infrastructure costs
  - (c) Self-service provisioning d) Localized data storage only
  - (d) Localized data storage only
- 1-c. What is the primary benefit of virtualization?[CO2] 1
- (a) Improved security
  - (b) Reduced hardware costs
  - (c) Increased network speed

- (d) Enhanced data encryption
- 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. Which of the following is NOT a component of SOA?[CO3] 1
- (a) Service registry
  - (b) Service-oriented middleware
  - (c) Service-oriented database
  - (d) Service consumer
- 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 are the key benefits of using managed resources in the cloud?[CO4] 1
- (a) Cost and flexibility
  - (b) Scalability and management overhead
  - (c) Reduced management overhead and scalability
  - (d) Customization and control
- 1-h. What is an unmanaged resource in cloud computing?[CO4] 1
- (a) User-controlled
  - (b) Provider-controlled
  - (c) Shared
  - (d) Physical
- 1-i. Which stage of the cloud data lifecycle involves gathering data from various sources?[CO5] 1
- (a) Ingestion
  - (b) Storage
  - (c) Analysis

(d) Presentation

1-j. During which stage of the cloud data lifecycle is data visualized and interpreted for end-users?[CO5] 1

(a) Ingestion

(b) Storage

(c) Analysis

(d) Presentation

**2. Attempt all parts:-**

2.a. Mention platforms which are used for large scale cloud computing? [CO1] 2

2.b. What is the purpose of virtualization?[CO2] 2

2.c. What is Service-Oriented Architecture (SOA)?[CO3] 2

2.d. Explain the concept of resource pooling.[CO4] 2

2.e. Can you define the term "cloud data lifecycle"?[CO5] 2

**SECTION B**

**30**

**3. Answer any five of the following:-**

3-a. Explain the main constituents that are part of the cloud ecosystem? [CO1] 6

3-b. What is the main difference between parallel and distributed computing? [CO1] 6

3-c. How does virtualization facilitate software testing and development?[CO2] 6

3-d. Can you explain why virtualization is crucial in modern IT infrastructure?[CO2] 6

3.e. Can you name a commonly used protocol for communication between services in SOA?[CO3] 6

3.f. Explain the concept of dynamic resource allocation in cloud computing.[CO4] 6

3.g. How does the implementation of multi-factor authentication enhance cloud security?[CO5] 6

**SECTION C**

**50**

**4. Answer any one of the following:-**

4-a. Define cloud computing and list its key characteristics.[CO1] 10

4-b. Explain the difference between Scalability and Elasticity in Cloud Computing? [CO1] 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] 10

5-b. Describe a scenario where a company might benefit from implementing both 10

server and desktop virtualization solutions.[CO2]

**6. Answer any one of the following:-**

- 6-a. Define SaaS and highlight its key characteristics. [CO3] 10
- 6-b. Explain the concept of layered cloud architecture design. [CO3] 10

**7. Answer any one of the following:-**

- 7-a. How can cloud resource management contribute to environmental sustainability?[CO4] 10
- 7-b. How do you provision a new instance in Amazon EC2, Azure Virtual Machine, and Google Compute Engine?[CO4] 10

**8. Answer any one of the following:-**

- 8-a. Compare and contrast the advantages and disadvantages of different cloud storage services, such as block storage, elastic file storage, and object storage.[CO5] 10
- 8-b. Create a diagram illustrating the relationship between different components of cloud security architecture, including IAM, security groups, and encryption protocols.[CO5] 10

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