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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: III - THEORY EXAMINATION (2024 - 2025)

Subject: Introduction to 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. On-demand Provisioning in Cloud Computing allows users to: (CO1, K1) 1
- (a) Manually allocate resources as needed
 - (b) Automatically allocate resources based on demand
 - (c) Pre-allocate fixed resources
 - (d) Share resources with other users
- 1-b. The environmental sustainability of Cloud Computing is enhanced by: (CO1, K1) 1
- (a) Increased energy consumption
 - (b) Utilization of renewable energy sources
 - (c) Frequent hardware replacements
 - (d) Limited use of virtualization
- 1-c. Select the architectural style which is often associated with RESTful web services. (CO2, K1) 1
- (a) SOAP
 - (b) REST
 - (c) WSDL
 - (d) RPC
- 1-d. The layer of the OSI model responsible for routing and logical addressing. (CO2, K1) 1
- (a) Physical Layer

- (b) Data Link Layer
 - (c) Network Layer
 - (d) Transport Layer
- 1-e. In cloud computing, the purpose of database storage is: (CO3, K1) 1
- (a) Storing only non-relational data
 - (b) Managing cloud provider resources
 - (c) Storing and retrieving structured data
 - (d) Supporting only offline data processing
- 1-f. In Storage-as-a-Service (STaaS), the responsibility of the service provider is to: (CO3, K1) 1
- (a) Only providing storage hardware
 - (b) Managing storage infrastructure and offering storage resources on-demand
 - (c) Offering physical storage devices for purchase
 - (d) Providing limited storage capacity
- 1-g. The common component of IAM systems is: (CO4, K1) 1
- (a) Data encryption
 - (b) Password management
 - (c) Network protocols
 - (d) Virtualization software
- 1-h. In a VPC, what is the significance of subnetting. (CO4, K1) 1
- (a) Determining the physical location of servers
 - (b) Managing access control lists
 - (c) Dividing the IP address space into smaller, manageable segments
 - (d) Configuring network protocols
- 1-i. Azure Storage plays the same role in Azure that _____ plays in Amazon Web Services. (CO5, K1) 1
- (a) S3
 - (b) EC2
 - (c) EC3
 - (d) All of the mentioned
- 1-j. Amazon _____ provides developers the tools to build failure resilient applications and isolate themselves from common failure scenarios. (CO5, K1) 1
- (a) AmWatch
 - (b) CloudWatch
 - (c) IamWatch
 - (d) All of the mentioned

2. Attempt all parts:-

- 2.a. Explain how Cloud Computing contributes to cost efficiency and scalability in 2

- comparison to traditional IT infrastructure. (CO1, K2)
- 2.b. Discuss the contribution of virtualization technologies to resource optimization in data centers. (CO2, K2) 2
- 2.c. Name three prominent Cloud Storage Providers and briefly describe each. (CO3, K1) 2
- 2.d. List some challenges in cloud security. (CO4, K1) 2
- 2.e. Provide insights into the impact of federation on the efficiency of cloud-based applications. (CO5, K2) 2

SECTION-B 30

3. Answer any five of the following:-

- 3-a. Explore the integration of Artificial Intelligence (AI) and Machine Learning (ML) in Cloud Computing, discussing their applications and benefits. (CO1, K3) 6
- 3-b. Discuss the implications of multi-cloud and hybrid cloud strategies for organizations, considering their advantages and challenges. (CO1, K2) 6
- 3-c. Discuss the management of workload in cloud environment. (CO2, K2) 6
- 3-d. Distinguish between type1 and type2 hypervisor. (CO2, K3) 6
- 3.e. Define firmware and name the cloud offering that delivers this service. (CO3, K1) 6
- 3.f. Elaborate the term “Global exchange of cloud resources”. (CO4, K2) 6
- 3.g. Discuss the challenges organizations may face when implementing serverless computing at scale. How can these challenges be mitigated for successful adoption. (CO5, K2) 6

SECTION-C 50

4. Answer any one of the following:-

- 4-a. Explore the concept of elasticity in Cloud Computing, providing examples and discussing its role in optimizing resource allocation. (CO1, K2) 10
- 4-b. Provide an in-depth overview of EC2 Instances in Cloud Computing, discussing their purpose, features, and how they contribute to scalability. (CO1, K2) 10

5. Answer any one of the following:-

- 5-a. Virtualization is the centre of cloud resource utilization. Explain how and Justify your answer. (CO2, K2) 10
- 5-b. Explain in detail various levels of implementing virtualization. (CO2, K2) 10

6. Answer any one of the following:-

- 6-a. Provide a detailed explanation of Storage-as-a-Service, including its architecture, deployment models, and advantages over traditional storage solutions. (CO3, K3) 10
- 6-b. Examine the features and use cases of three prominent Cloud Storage Providers: S3, RDS, and EBS. Highlight their strengths and potential limitations. (CO3, K2) 10

7. Answer any one of the following:-

- 7-a. Discuss multi- factor authentication. State its features, advantages and limitations too. (CO4, K2) 10

- 7-b. Provide an overview of commonly used Security Standards in cloud computing. 10
Discuss the role of standards in ensuring a secure cloud environment. (CO4, K2)
8. Answer any one of the following:-
- 8-a. Define Federation in the context of cloud computing. Discuss its significance and 10
the challenges associated with implementing a federated cloud model. (CO5, K2)
- 8-b. Present a case study illustrating the successful implementation of cloud computing 10
in a real-world scenario. Discuss the challenges faced, solutions employed, and the
overall impact on the organization. (CO5, K3)

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