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Printed Page:-4 **Subject Code:- BMICSAI0520**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)
M.Tech Integrated
SEM: V - THEORY EXAMINATION (2025 - 2026)
Subject: Cloud Virtualization

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. The technology used to distribute service requests to resources is referred to as _____. (CO1, K1) 1

(a) load performing
(b) load scheduling
(c) load balancing
(d) All of the mentioned

1-b. ____ is an operating system or application environment installed on software that reproduces dedicated hardware virtually. (CO1, K1) 1

(a) Virtual machine
(b) Virtual computing
(c) Virtual cloud
(d) Virtual OS

1-c. One of the following is not a type of cloud server. (CO2, K1) 1

(a) Merged Cloud Servers
(b) Public Cloud Servers
(c) Private Cloud Servers
(d) Dedicated Cloud Servers

1-d. Applications and services that run on a distributed network using virtualized resources is known as _____. (CO2, K1) 1

(a) Parallel computing
(b) Soft computing
(c) Distributed computing

(d) Cloud computing

1-e. Choose type of computing which is a form of self-managing systems. (CO3, K1) 1

(a) Mobile Computing
(b) Home-based Cloud Computing
(c) Autonomic Computing
(d) Jungle Computing

1-f. For which workloads should a Solutions Architect consider using Elastic Beanstalk. (CO3, K1) 1

(a) A Web application using Amazon RDS
(b) An Enterprise Data Warehouse
(c) A static website
(d) None

1-g. Amazon _____ cloud-based storage system allows you to store data objects ranging in size from 1 byte up to 5GB. (CO4, K1) 1

(a) S1
(b) S2
(c) S3
(d) S4

1-h. CloudFront supports _____ data by performing static data transfers and streaming content. (CO4, K1) 1

(a) table caching
(b) geocaching
(c) index caching
(d) windows Media Server

1-i. SQS stands for. (CO5, K1) 1

(a) Simple Queue Service
(b) Sample Queue Service
(c) Simple Queue Store
(d) Sample Queue Store

1-j. Choose the central application in the AWS portfolio. (CO5, K1) 1

(a) Amazon Elastic Compute Cloud
(b) Amazon Simple Queue Service
(c) Amazon Simple Notification Service
(d) Amazon Simple Storage System

2. Attempt all parts:-

2.a. Define emulation with a suitable example. (CO1, K2) 2

2.b. Write down various design objectives for cloud computing. (CO2, K1) 2

2.c. Explain AWS Elastic Beanstalk. (CO3, K2) 2

2.d. Write short notes on Amazon S3 cross-region replication. (CO4, K2) 2

2.e. Explain benefits of ELB. (CO5, K2) 2

SECTION-B 30

3. Attempt all parts:-

3.a. Answer any one of the following:-

3.a.(i)	Explain the need for data center virtualization. (CO1, K2)	6
3.a.(ii)	Differentiate between native virtualization and emulation. (CO1, K4)	6

3.b. Answer any one of the following:-

3.b.(i)	Mention various benefits of VMs in cloud. (CO2, K1)	6
3.b.(ii)	Discuss various security challenges in VMs. (CO2, K5)	6

3.c. Answer any one of the following:-

3.c.(i)	Explain benefits for CloudFormation in detail. (CO3, K5)	6
3.c.(ii)	Distinguish between Spot, On-Demand, and Reserved Instances. (CO3, K4)	6

3.d. Answer any one of the following:-

3.d.(i)	Write down the differences between S3 and EBS. (CO4, K4)	6
3.d.(ii)	Explain the storage classes available in Amazon S3 in detail. (CO4, K2)	6

3.e. Answer any one of the following:-

3.e.(i)	Compare different privacy considerations in cloud-based information systems versus traditional on-premises systems. (CO5, K5)	6
3.e.(ii)	Analyze common cloud security challenges and propose solutions using IAM, Security Groups, and VPC configurations. (CO5, K3)	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	Explain different implementation levels of virtualization. (CO1, K2)	10
4-b.	Explain network and security backup considerations in server virtualization. (CO1, K2)	10

5. Answer any one of the following:-

5-a.	Explain whether virtualization support is needed to achieve fast cloning of VMs and how VM cloning enables fast recovery. (CO2, K2)	10
5-b.	Given a scenario of migrating an enterprise application to a public cloud (AWS or Azure), develop a step-by-step migration plan highlighting potential challenges and strategies to mitigate them. (CO2, K5)	10

6. Answer any one of the following:-

6-a.	Explain types of Amazon EC2 instances and essential features. (CO3, K2)	10
6-b.	Define Elastic Beanstalk with its components. (CO3, K2)	10

7. Answer any one of the following:-

7-a.	Design a secure data storage solution using Amazon S3 and Glacier for an enterprise that requires frequent access to recent data and archival of older data. Explain your approach. (CO4, K4)	10
7-b.	Compare RDS and DynamoDB in terms of architecture, scalability, and use cases. Provide examples where each service is preferable and justify your choices. (CO4, K5)	10

8. Answer any one of the following:-

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8-a.	Analyze cloud federation benefits and challenges for integrating enterprise identity systems with AWS. Propose a secure federation design. (CO5, K3)	10
8-b.	Evaluate the role of presence services in improving user experience for a global cloud application. Suggest implementation approaches using AWS tools. (CO5, K4)	10