.

Printed Page:-4 **Subject Code:- AMICSAI0520**

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. In computing, _____ improves the distribution of workloads across multiple computing resources, such as computers, a computer cluster, network links, central processing units, or disk drives. (CO1,K1) 1

(a) Virtual machine
(b) Virtual computing
(c) Virtual cloud
(d) load balancer

1-b. Choose the type of virtualization is found in hypervisor such as Microsoft's Hyper-V. (CO1, K1) 1

(a) paravirtualization
(b) full virtualization
(c) emulation
(d) None of these

1-c. Point out the wrong statement.(CO2, K1) 1

(a) An Amazon Machine Image can be provisioned with an operating system, an enterprise application, or application stack
(b) AWS is a deployment enabler
(c) Google Apps lets you create a scalable cloud-based application
(d) None of the mentioned

1-d. Choose cloud concept that is related to pooling and sharing of resources: (CO2, K1) 1

(a) Polymorphism
(b) Abstraction

(c) Virtualization
(d) None of the mentioned

1-e. Type 1 Hypervisor is_____. (CO3, K1) 1

(a) wind river simics
(b) virtual server 2005r2
(c) kvm
(d) lynxsecure

1-f. CLI stands for: (CO3, K1) 1

(a) Common Line Interface
(b) Command Line interface
(c) Command Link interface
(d) Common Link Interface

1-g. Amazon S3 is a _____.(CO4,K1) 1

(a) Relational database
(b) Key-Based object store
(c) Domain System
(d) Content Delivery Network

1-h. These are the virtual containers that are used to store data in Glacier. (CO4, K1) 1

(a) Vaults
(b) Archieves
(c) buckets
(d) regions

1-i. To prevent messages from being lost or becoming unavailable, all messages are stored _____ across multiple servers and data centers.(CO5,K1) 1

(a) Publicly
(b) Superfluously
(c) Redundantly
(d) Privately

1-j. With Amazon _____, developers can monitor metrics for Amazon SQS and trigger an alarm when a threshold is met. (CO5, K1) 1

(a) CloudFront
(b) Cloud Watch
(c) CloudSearch
(d) CloudFormation

2. Attempt all parts:-

2.a. Define emulation with suitable example.(CO1, K1) 2

2.b. Define Software-as-a-Service. (CO2, K1) 2

2.c. Describe AWS Elastic Beanstalk. (CO3,K3) 2

2.d. Write short notes on Amazon S3 Event notifications.(CO4,K2) 2

2.e. Explain Cloud federation. (CO5, K2) 2

SECTION-B 30

3. Attempt all parts:-

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

3.a.(i)	Differentiate between native Virtualization and Emulation. (CO1,K3)	6
3.a.(ii)	Explain level of virtualization and enlist the benefits of virtualization. (CO1, K2)	6

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

3.b.(i)	Discuss Fault tolerance and Graceful Degradation in Data Center Interconnection Networks. (CO2, K2)	6
3.b.(ii)	Explain about Virtual Machine Manager with a suitable example and proper diagram.(CO2,K3)	6

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

3.c.(i)	Describe OPSWORKS in detail with it's concepts. (CO3, K2)	6
3.c.(ii)	Explain Amazon SNS in AWS with suitable real time example. (CO3, K2)	6

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

3.d.(i)	Examine various Security Challenges in Storing data in cloud. Also write about how to overcome these challenges. (CO4, K2)	6
3.d.(ii)	Describe the various methods used to secure an AWS environment using IAM, MFA, Security Groups, and VPC configurations. (CO4, K2)	6

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

3.e.(i)	Discuss ‘presence in the cloud’. Explain how organizations maintain global presence using cloud services. (CO5, K2)	6
3.e.(ii)	Write about the major security risks associated with SaaS applications. Explain any mitigation strategies as well. (CO5, K2)	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	Describe how virtualization enables data centre automation. Explain automated provisioning, monitoring, orchestration, and policy-based resource allocation with suitable examples. (CO1, K3)	10
4-b.	Explain the concept of Virtual Machine (VMs) and discuss how virtualization helps in improving system utilization, flexibility, and isolation in modern computing environments. (CO1, K3)	10

5. Answer any one of the following:-

5-a.	Is virtualization support is needed to achieve fast cloning of VMs? Explain how VM cloning can enable fast recovery. (CO2,K3)	10
5-b.	Compare the features, services, and architecture of Google App Engine, Amazon Web Services (AWS), and Microsoft Azure. Highlight their strengths and limitations. (CO2, K5)	10

6. Answer any one of the following:-

6-a.	Explain the process of building a virtual infrastructure using virtual servers, virtual networks, and scalable storage. Describe how server virtualization improves resource utilization and flexibility. (CO3, K3)	10
6-b.	Explain the role of Security Groups and Virtual Private Cloud (VPC) in securing	10

cloud resources. Describe VPC components like subnets, route tables, NAT gateway, and ACLs, (CO3, K2)

7. Answer any one of the following:-

7-a.	Describe the architecture and features of Amazon S3. Explain storage classes, bucket policies, lifecycle rules, and data durability mechanisms. (CO4, K2)	10
7-b.	Differentiate between DynamoDB and RDS in detail.(CO4,K4)	10

8. Answer any one of the following:-

8-a.	Discuss the concept of Privacy in Cloud-Based Information Systems. Explain key privacy challenges, data confidentiality issues, regulatory requirements, and privacy-preserving techniques. (CO5, K3)	10
8-b.	Describe how Availability Zones support high availability in AWS. Explain the role of redundancy, geographic distribution, and failover strategies in ensuring service continuity. (CO5, K2)	10