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Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: VII - THEORY EXAMINATION (2024- 2025)

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.

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SECTION-A 20

1. Attempt all parts:-

1-a. One of the following best describes the primary objective of Cloud Computing: (CO1, K1) 1

(a) Minimizing network accessibility

(b) Maximizing local data storage

(c) Providing scalable and on-demand access to computing resources

(d) Limiting software compatibility

1-b. Parallel Computing involves_____.(CO1, K1) 1

(a) Utilizing multiple processors to perform computations simultaneously

(b) Utilizing a single processor for multiple tasks

(c) Operating on a single process at a time

(d) Using processors sequentially for computation

1-c. Virtualization primarily aims to: (CO2, K2) 1

(a) Increase latency

(b) Improve resource utilization

(c) Decrease network traffic

(d) Enhance hardware compatibility

1-d. This type of virtualization isolates an operating system from the underlying hardware. (CO2, K2) 1

(a) Storage virtualization

(b) Server virtualization
(c) Network virtualization
(d) Operating System virtualization

1-e. The primary goal of Service-Oriented Architecture (SOA). (CO3, K2) 1

(a) Tight coupling of systems
(b) Loosely coupling distributed services
(c) Elimination of services
(d) Limiting interoperability

1-f. In a cloud environment, who primarily decides the infrastructure and resource allocations? (CO3, K2) 1

(a) Cloud Consumer
(b) Cloud Provider
(c) Cloud Auditor
(d) Cloud Carrier

1-g. _____ is used to control inbound and outbound traffic for instances in AWS. (CO4, K1) 1

(a) Subnets
(b) Security Groups
(c) Routing Tables
(d) VPC Endpoints

1-h. _____ provides a fully managed NoSQL database in AWS. (CO4, K1) 1

(a) Amazon RDS
(b) Amazon DynamoDB
(c) Amazon S3
(d) Amazon EFS

1-i. Challenge that can arise from vendor lock-in in cloud computing: (CO5, K2) 1

(a) Enhanced data security
(b) Interoperability issues
(c) Better performance
(d) Reduced costs

1-j. Confidentiality in security standards primarily focuses on: (CO5, K2) 1

(a) Keeping data accurate and reliable
(b) Ensuring data is available when needed
(c) Preventing unauthorized access to data
(d) Preventing accidental data loss

2. Attempt all parts:-

2.a. Differentiate between public, private, and hybrid clouds. (CO1, K4) 2

2.b. Define the concept of hypervisor and its role in virtualization technology. (CO2, 2

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	K2)	
2.c.	Give an example of a real-world System of Systems. (CO3, K2)	2
2.d.	Compare the level of control and responsibilities between using managed and unmanaged storage services like Block Storage and Object Storage in a cloud environment. (CO4, K4)	2
2.e.	Name three challenges faced in ensuring cloud security. (CO5, K2)	2
SECTION-B		30
3. Answer any five of the following:-		
3-a.	Discuss the way "on-demand provisioning" differs from "fixed resource allocation". (CO1, K2)	6
3-b.	Explain the significance of pay-as-you-go models in on-demand provisioning. (CO1, K2)	6
3-c.	Discuss the significance of templates in virtual machine deployment. (CO2, K4)	6
3-d.	Discuss the significance of live migration and its impact on virtual machine management. (CO2, K4)	6
3.e.	Compare the architectural attributes of Representational State Transfer (REST) and Simple Object Access Protocol (SOAP) in web service design. (CO3, K4)	6
3.f.	Brief the key advantages of using DynamoDB in terms of performance. (CO4, K2)	6
3.g.	Discuss the role-based access control mechanism in cloud environments. (CO5, K2)	6
SECTION-C		50
4. Answer any one of the following:-		
4-a.	Explain the role of APIs (Application Programming Interfaces) in the functionality of cloud services. (CO1, K2)	10
4-b.	Discuss the idea of cloud abstraction and its importance in cloud computing architectures. (CO1, K2)	10
5. Answer any one of the following:-		
5-a.	Relate the key features and functionalities of VMware, Hyper-V, and VirtualBox, with their strengths and weaknesses. (CO2, K4)	10
5-b.	Compare and contrast Type 1 and Type 2 VMMs, emphasizing their respective functionalities and applications. (CO2, K4)	10
6. Answer any one of the following:-		
6-a.	Discuss Layered Cloud Architecture and compare benefits of CCRA over it. (CO3, K4)	10
6-b.	Compare Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS) in the cloud computing landscape. (CO3, K4)	10
7. Answer any one of the following:-		
7-a.	Discuss the need for Storage Migration in cloud services and brief the way it is related to Disaster Recovery. (CO4, K2)	10

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7-b.	Elaborate on the benefits and use cases of Direct Connect in establishing a dedicated connection to cloud services and how it aids in managing instance traffic and data. (CO4, K2)	10

8. Answer any <u>one</u> of the following:-

8-a.	Discuss the role of continuous monitoring and auditing in maintaining cloud security. How does it aid in threat detection, incident response, and compliance management? (CO5, K4)	10
8-b.	Examine the principles for an open security architecture in cloud computing.(CO5, K4)	10

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