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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: V - THEORY EXAMINATION (2025 - 2026)

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

20

1. Attempt all parts:-

1-a. One of the following is a Cloud service model.(CO1, K2)

1

- (a) SaaS
- (b) VPN
- (c) HTTP
- (d) LAN

1-b. Community cloud means:(CO1, K1)

1

- (a) Shared by several organizations with common interests
- (b) Free public cloud
- (c) Paid private cloud
- (d) ISP cloud

1-c. The technology used to distribute service requests to resources is referred to as _____ . (CO2, K2)

1

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

1-d. Point out the correct statement. (CO2, K2)

1

- (a) A client can request access to a cloud service from any location
- (b) A cloud has multiple application instances and directs requests to an instance based on conditions
- (c) Computers can be partitioned into a set of virtual machines with each machine being assigned a workload

- (d) All of the mentioned
- 1-e. In layered cloud design, which layer provides applications like Zoom, Salesforce, Office 365? (CO3, K2) 1
- (a) SaaS
- (b) IaaS
- (c) Middleware
- (d) PaaS
- 1-f. State the service model best suited for a startup seeking full control over OS, middleware, and applications, but not hardware. (CO3, K3) 1
- (a) SaaS
- (b) IaaS
- (c) PaaS
- (d) FaaS
- 1-g. Select the correct option for a deployment model (CO4, K1) 1
- (a) Public
- (b) Private
- (c) Hybrid
- (d) All of the mentioned
- 1-h. Cloud storage vendors manage capacity, security and ----- to make data accessible to your applications all around the world (CO4, K2) 1
- (a) Networking
- (b) Scalability
- (c) accessibility
- (d) Durability
- 1-i. In general, Select one type of cloud service provides the most areas of accountability for the customer. (CO5,K2) 1
- (a) Platform-as-a-Service (PaaS)
- (b) Security-as-a-Service
- (c) Infrastructure-as-a-Service (IaaS)
- (d) Software-as-a-Service (SaaS)
- 1-j. To find the best security-as-a-service offering for your organization: (CO5,K3) 1
- (a) Ask the vendor what they recommend
- (b) Assess your requirements, do a risk assessment and a cost/benefit analysis of the options
- (c) Find the cheapest monthly option and use whatever is offered with that service
- (d) Ask your peers and do exactly what they're doing
2. Attempt all parts:-
- 2.a. Differentiate between Public Cloud and Private Cloud.(CO1,K4) 2
- 2.b. Give one real-world example of “system of systems” in cloud. (CO2, K3) 2
- 2.c. Define Cloud Computing Reference Architecture (CCRA). (CO3, K1) 2
- 2.d. Identify a scenario where CCRA evolution becomes necessary. (CO4, K3) 2

2.e.	Classify different resource provisioning methods. (CO5, K2)	2
SECTION-B		30
3. Attempt all parts:-		
3.a. Answer any <u>one</u> of the following:-		
3.a.(i)	Explain in detail the different service models of Cloud Computing (IaaS, PaaS, SaaS) with examples.(CO1, K2)	6
3.a.(ii)	Define the Elasticity in Cloud Computing. Explain with real-life scenarios.(CO1,K2)	6
3.b. Answer any one of the following:-		
3.b.(i)	Describe the core principles of Service-Oriented Architecture (SOA). Explain three key principles (e.g., loose coupling, service contract, service reusability) and briefly describe what each means for system design. (CO2,K2)	6
3.b.(ii)	Analyze the advantages and disadvantages of application virtualization compared to server virtualization. (CO2,K4)	6
3.c. Answer any one of the following:-		
3.c.(i)	Describe the responsibilities of a cloud provider. (CO3,K2)	6
3.c.(ii)	Describe the importance of scalability and flexibility in cloud deployment. (CO3,K2)	6
3.d. Answer any one of the following:-		
3.d.(i)	Explain the importance of service management in ensuring performance. (CO4, K3)	6
3.d.(ii)	Assess cloud service management in improving resource utilization. (CO4, K4)	6
3.e. Answer any one of the following:-		
3.e.(i)	Relate inter-cloud resource management to multi-cloud deployments with suitable examples. (CO5, K3)	6
3.e.(ii)	Compare static and dynamic resource provisioning in terms of efficiency. (CO5, K3)	6
SECTION-C		50
4. Answer any <u>one</u> of the following:-		
4-a.	Define Cloud Computing in detail. Explain its evolution, key features, and advantages with real-life examples.(CO1,K1)	10
4-b.	Describe is Utility Computing? Discuss how it supports the growth of cloud-based business models.(CO1,K2)	10
5. Answer any <u>one</u> of the following:-		
5-a.	A company is building a public-facing API for e-commerce. Critique the use of an architecture based on SOAP versus one based on REST for this scenario and recommend the optimal choice, justifying your reasoning. (CO2, K5)	10
5-b.	Explain the different levels of implementation of virtualization with neat diagrams. Compare bare-metal hypervisors (Type-1) and hosted hypervisors (Type-2) with examples. (CO2, K3)	10
6. Answer any <u>one</u> of the following:-		
6-a.	Explain the deployment models (public, private, hybrid) with their advantages and limitations. (CO3,K2)	10

- 6-b. Discuss the benefits of CCRA for cloud adoption in enterprises. (CO3,K2) 10
7. Answer any one of the following:-
- 7-a. Summarize cloud taxonomy and show its classification of SaaS, PaaS, and IaaS. (CO4, K2) 10
- 7-b. Compare traditional IT reference models with IBM's CCRA. (CO4, K3) 10
8. Answer any one of the following:-
- 8-a. Describe the process of resource provisioning in cloud computing with a neat diagram. (CO5, K2) 10
- 8-b. Explain the working of routing in VPC with routing tables. (CO5, K2) 10

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