Printed Page:- 04 Subject Code:- BCS0301

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: III - THEORY EXAMINATION (2024 - 2025)

Subject: Foundation of 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. Cloud computing is an abstraction based on the notion of pooling physical resources and presenting them as a _____ resource. (CO1,K1) 1

(a) real
(b) virtual
(c) cloud
(d) none of the mentioned

1-b. Over Provisioning means- (CO1,K1) 1

(a) Overload to the cloud vendors
(b) Demanding/ allocating resources more than the need/ requirement
(c) Demanding/ allocating resources less than the need/ requirement
(d) Overload to the consumer

1-c. The technology used to distribute service requests to resources is referred to as _____ (CO2,K1) 1

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

1-d. In a _____ scheme, the VM is installed as a Type 1 Hypervisor directly onto the hardware. (CO2,K1) 1

(a) paravirtualization
(b) full virtualization
(c) emulation
(d) none of the mentioned

1-e. _____ describes a cloud service that can only be accessed by a limited amount of people. (CO3,K1) 1

(a) Data center
(b) Private cloud
(c) Virtualization
(d) Public cloud

1-f. When you add a software stack, such as an operating system and applications to the service, the model shifts to _____ model. (CO3,K1) 1

(a) SaaS
(b) PaaS
(c) IaaS
(d) All of the mentioned

1-g. In Inter-Cloud multiple cloud entities can work in (CO4,K1) 1

(a) Divorce
(b) Alliance
(c) Hostility
(d) Discord

1-h. Provisioning parameters helps to (CO4,K1) 1

(a) Minimize response time
(b) Maximize Cost
(c) Maximize SLA Violation
(d) All of the mentioned

1-i. .....programming languages are natively supported in the programming environment for Google App Engine. (CO5,K1) 1

(a) Java and Python only
(b) C++ and Go only
(c) Java, Python, and Go
(d) JavaScript and Ruby only

1-j. Select one of the following which is a common challenge in scaling serverless computing. (CO5,K2) 1

(a) Decreased cold start latency
(b) Cold start latency
(c) Manual scaling challenges
(d) Static resource allocation challenges

2. Attempt all parts:-

2.a.	Discuss public and private clouds. (CO1,K2)	2
2.b.	Define loose coupling in SOA. (CO2,K1)	2
2.c.	Explain elasticity in cloud computing. (CO3,K2)	2
2.d.	Define resource pooling in cloud environments. (CO4,K1)	2
2.e.	Name two open-source cloud platforms and two commercial cloud platforms. (CO5,K1)	2

SECTION-B 30

3. Answer any five of the following:-

3-a.	Describe the role of virtualization in the evolution of cloud computing and its benefits. (CO1,K2)	6
3-b.	Explain the purpose of EC2 instances in AWS and describe at least three types of instances and their use cases. (CO1,K2)	6
3-c.	Illustrate the main principles of SOA and how they promote system flexibility. (CO2,K3)	6
3-d.	Describe the REST architectural style, its principles, and how it is implemented in web services. (CO2,K2)	6
3.e.	Analyze three major architectural challenges in designing cloud-based systems and propose solutions for each. (CO3,K5)	6
3.f.	Explain the importance of inter-cloud resource management and discuss its impacts on scalability of cloud services. (CO4,K2)	6
3.g.	Recognize the advantages of using Google App Engine over traditional application hosting environments. (CO5,K2)	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	Analyze and discuss any 5 factors to consider when choosing between public, private, and hybrid cloud models. (CO1,K4)	10
4-b.	Discuss the advantages and challenges of implementing distributed systems in cloud environments. (CO1,K2)	10

5. Answer any one of the following:-

5-a.	Discuss paravirtualization and its advantages, and compare it with full virtualization. Provide examples of scenarios where paravirtualization is preferred. (CO2,K4)	10
5-b.	Explain SOA in detail, including its core components, principles, and how it enables scalability and reusability in software systems. Provide examples of its application. (CO2,K2)	10

6. Answer any one of the following:-

6-a.	Describe and Sketch the NIST Cloud Computing Reference Architecture in detail, including its roles, activities, and the interactions between them. (CO3,K3)	10

6-b.	Distinguish the role of cloud storage in disaster recovery and business continuity planning. Provide detailed examples of tools and strategies. (CO3,K4)	10

7. Answer any one of the following:-

7-a.	Compare and contrast static, dynamic, and hybrid resource provisioning methods in terms of cost, performance, and efficiency. (CO4,K5)	10
7-b.	Discuss about the global exchange of cloud resources and explain its advantages for businesses.(CO4,K2)	10

8. Answer any one of the following:-

8-a.	Compare and contrast Infrastructure-as-a-Service (IaaS) and Platform-as-a-Service (PaaS) models. (CO5,K5)	10
8-b.	Analyze the advantages and limitations of using OpenStack as an open-source cloud solution compared to commercial platforms like AWS or Azure. (CO5,K4)	10