Printed Page:- 04 Subject Code:- ACSBS0512

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: V - THEORY EXAMINATION (2024- 2025)

Subject: Cloud, Microservices & Application

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. What is Cloud Computing? (CO1, K1) 1

(a) Cloud Computing means providing services like storage, servers, database, networking, etc

(b) Cloud Computing means storing data in a database

(c) Cloud Computing is a tool used to create an application

(d) None of the mentioned

1-b. Which of the following are the features of cloud computing? (CO1, K2) 1

(a) Security

(b) Availability

(c) Large Network Access

(d) All of the mentioned

1-c. Microservice could be considered as subset of _____ (CO2, K1) 1

(a) POA

(b) SOA

(c) Cloud

(d) Java

1-d. _____ acts as a database of services their instances and corresponding location. (CO2, K2) 1

(a) Service Registry

(b) Domain Registry

(c) Data Management

(d) Service Deployment

1-e. What are the requirements to become a DevOps Engineer? (CO3, K1) 1

(a) Fluency in web languages like Ruby, Python, PHP or Java

(b) Interpersonal skills that help you communicate and collaborate across teams and roles

(c) Experience with infrastructure automation tools like Chef, Puppet, Ansible, SaltStack or Windows PowerShell DSC

(d) All of the above

1-f. When does testing occur in a DevOps environment? (CO3,K1) 1

(a) after development but before release

(b) during development and after release

(c) only after release

(d) only during development

1-g. This volume type can be used to share contents within containers in a pod, but will not persist beyond the life of a pod. (CO4, K2) 1

(a) Local

(b) ConfigMap

(c) FlexVolume

(d) EmptyDir

1-h. _____ are instances of Docker images that can be run using the Docker run command. (CO4, K1) 1

(a) Hub

(b) Container

(c) File

(d) Cloud

1-i. Encryption is: (CO5, K1) 1

(a) A way to increase cloud storage capacity

(b) A technique to hide the location of cloud servers

(c) The process of converting data into a code to prevent unauthorized access

(d) A method to access cloud data without a password

1-j. Define, Which cloud security component helps detect suspicious behavior and security incidents? (CO5, K2) 1

(a) Data Encryption

(b) Identity and Access Management (IAM)

(c) Security Monitoring and Logging

(d) Multi-Factor Authentication (MFA)

2. Attempt all parts:-

2.a.	Explain the pay-as-you-go pricing model in cloud computing. (CO1,K1)	2
2.b.	Explain the difference between GET and POST requests in APIs. (CO2, K1)	2
2.c.	Define continuous delivery (CD). (CO3, K2)	2
2.d.	List the main components of Kubernetes architecture. (CO4, K2)	2
2.e.	Define security features of cloud ? (CO5, K1)	2

SECTION-B 30

3. Answer any five of the following:-

3-a.	Illustrate the virtual machines in the context of cloud computing. (CO1,K2)	6
3-b.	Difference among public, private, and hybrid clouds. (CO1, K3)	6
3-c.	In microservices, how can a circuit breaker pattern improve system resilience? (CO2, K4)	6
3-d.	Discuss the key components of an API request. (CO2, K2)	6
3.e.	Describe the CI/CD tool and its primary purpose. (CO3,K2)	6
3.f.	List and explain the various Docker components. (CO4, K2)	6
3.g.	Describe the significance of regular security audits in cloud environments. (CO5, K3)	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	Describe the advantages and challenges of adopting cloud computing for businesses. How does cloud technology impact scalability, flexibility, and cost-efficiency in IT operations? (CO1, K3)	10
4-b.	Define IaaS and provide a detailed overview of the infrastructure components offered in an IaaS environment. (CO1, K2)	10

5. Answer any one of the following:-

5-a.	Explain the role of HTTP methods (GET, POST, PUT, DELETE) in API communication. Provide real-world scenarios where each method is appropriately used. (CO2, K4)	10
5-b.	In what ways does serverless computing complement or diverge from the microservices architecture in a cloud-based system? (CO2, K3)	10

6. Answer any one of the following:-

6-a.	Discuss the role of automation in DevOps. Provide examples of areas where automation can have a significant impact on the development and operations processes. (CO3, K4)	10
6-b.	Compare and contrast different containerization technologies, such as Docker and container orchestration tools like Kubernetes. How do these technologies enhance the deployment and scalability of applications? (CO3, K4)	10

7. Answer any one of the following:-

7-a.	Define various K8's services running on nodes and describe the role of each	10

service? (CO4, K2)

7-b.	Explain the components of a Docker container and the purpose of each. For example, images, containers, Docker daemon, and Docker CLI. (CO4, K2)	10

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

8-a.	Mention the services that are provided by Window Azure Operating System? (CO5, K2)	10
8-b.	Explain hybrid and community cloud? (CO5, K1)	10