Question Paper Code | 13104

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2024
Fifth Semester
Computer Science and Business Systems
20CBEL502 - CLOUD, MICRO SERVICES AND APPLICATION WITH LABORATORY
Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (MCQ) (20 × 1 = 20 Marks)
Answer ALL Questions

		Marks	K–Level	CO
1.	Which of the following is not a core characteristic of cloud computing? (a) On-Demand Self-Service (b) Broad Network Access (c) Limited Storage (d) Resource Pooling	1	K1	CO1
2.	Which of the following service models provides the highest level of control to the user? (a) Software as a Service (SaaS) (b) Platform as a Service (PaaS) (c) Infrastructure as a Service (IaaS) (d) Network as a Service (NaaS)	1	K1	CO1
3.	Choose the component in cloud computing that is responsible for allocating resources efficiently to users? (a) Cloud Storage (b) Cloud Network (c) Cloud Orchestrator (d) Cloud Security	1	K1	CO1
4.	Which of the following is an open-source platform used for building private clouds? (a) AWS (b) OpenStack (c) Google Cloud (d) Azure	1	K1	CO1
5.	Which of the following is a key drawback of a monolithic architecture? (a) High Initial Development Cost (b) Limited Reusability (c) Easier Scalability (d) Simple Deployment	1	K1	CO2
6.	Cloud-native applications are typically built using which of the following architecture? (a) Monolithic (b) Client-Server (c) Microservices (d) Peer-to-Peer	1	K1	CO2
7.	Which of the following is not one of the 12 factors? (a) Dev / Prod Parity (b) Stateless Processes (c) Localized Logging (d) Backing Services	1	K1	CO2
8.	Select the protocol that is most commonly used for RESTful APIs. (a) HTTP (b) FTP (c) SMTP (d) SNMP	1	K1	CO2
9.	Which of these is a primary goal of DevOps? (a) Reducing the number of software releases (b) Eliminating the need for testing (c) Increasing collaboration between development and operations teams (d) Replacing all legacy systems	1	K1	CO3
10.	Which of these tools is primarily used for container orchestration in DevOps? (a) Docker (b) Ansible (c) Kubernetes (d) Terraform	1	K1	CO3
11.	In Docker, the component responsible for managing and running containers is called as _____. (a) Docker Image (b) Docker Engine (c) Docker File (d) Docker Network	1	K1	CO3
12.	Which Docker command is used to list all running containers? (a) dockerps (b) dockerls (c) docker list (d) docker run	1	K1	CO3
13.	Which principle of security by design ensures that only the minimum necessary permissions are granted to users and applications? (a) Least Privilege (b) Authentication (c) Data Encryption (d) Shared Responsibility	1	K1	CO4
14.	Which of the following is not a typical component of IAM? (a) User Authentication (b) Access Control (c) Data Replication (d) Role Management	1	K1	CO4

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

1	K1	CO4

15. In cloud data security, choose the technique that is most commonly used to protect sensitive data.
(a) Authentication (b) Data Encryption (c) Logging (d) Performance Monitoring

16. Which cloud monitoring tool is commonly used with Amazon Web Services?
(a) CloudTrail (b) CloudWatch (c) Azure Security Center (d) Google Cloud Functions
1 K1 CO4

17. Which of the following is not a common design consideration for cloud applications?
(a) Scalability (b) Fault Tolerance (c) Limited Internet Access (d) Data Redundancy
1 K1 CO5

18. Select the commonly used Python framework for web development.
(a) Flask (b) Express (c) Spring Boot (d) Laravel
1 K1 CO5

19. In Python development, which tool is often used to manage project dependencies?
(a) Git (b) Pip (c) Docker (d) Flask
1 K1 CO5

20. Which cloud service is commonly used for deploying Python applications?
(a) Microsoft Word (b) Google App Engine
(c) VirtualBox (d) Windows Task Scheduler
1 K1 CO5

PART - B (10 × 2 = 20 Marks)
Answer ALL Questions

No.	Question	Marks	K	CO
21.	Compare public cloud and private cloud.	2	K2	CO1
22.	How does resource pooling in cloud computing affect pricing?	2	K1	CO1
23.	Differentiate between a monolithic and a distributed architecture.	2	K2	CO2
24.	What is API management, and how does it help in managing microservices?	2	K1	CO2
25.	What is Jenkins, and how is it used in a DevOps pipeline?	2	K1	CO3
26.	What is the command to build a Docker image from a Dockerfile?	2	K1	CO3
27.	What are the primary goals of cloud security?	2	K1	CO4
28.	Define cloud monitoring.	2	K1	CO4
29.	List out two popular cloud platforms used for deploying applications.	2	K1	CO5
30.	How does continuous integration and continuous deployment (CI/CD) support cloud application deployment?	2	K1	CO5

PART - C (6 × 10 = 60 Marks)
Answer ALL Questions

31. a) Identify the cloud service model that would be most appropriate for this scenario. A company wants to migrate its email and collaboration tools to the cloud. They need a solution that requires minimal IT management while offering the flexibility to scale as the company grows.
10 K3 CO1

OR

b) Develop the guiding principles for adopting and using the cloud in organizations. Apply these principles to a business that is transitioning from on-premise infrastructure to cloud-based solutions.
10 K3 CO1

32. a) Apply the Statelessness and Backing Services principles of the 12-Factor App methodology in the given scenario to ensure the application is portable, scalable, and maintainable. A team is working on a new web application that needs to be deployed and scaled on multiple cloud platforms. They are considering adopting the 12-Factor App methodology to standardize their development process.
10 K3 CO2

OR

b) Design the micro services for the given healthcare platform to ensure compliance with data privacy regulations. A healthcare organization is transitioning from a monolithic application to micro services to improve agility and scalability. They need to ensure that data privacy and security standards are met in the new architecture.
10 K3 CO2

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

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33.	a)	Explain the primary roles and responsibilities of a DevOps engineer within an organization. How does a DevOps engineer collaborate with developers and QA engineers to ensure the successful implementation of DevOps practices?	10	K2	CO3

OR

	b)	Outline the Docker's client-server architecture. How does the Docker client interact with the Docker daemon, and what is the role of the Docker registry in storing and distributing images?	10	K2	CO3

34.	a)	Summarize the components of an effective IAM strategy for cloud environments.	10	K2	CO4

OR

	b)	Relate some of the security tools provided by major cloud providers like AWS, and Google Cloud. How do these tools help organizations manage cloud security?	10	K2	CO4

35.	a)	Explain the steps involved in developing and deploying a Python-based web application in the cloud, starting from design to deployment.	10	K2	CO5

OR

	b)	Demonstrate how to use a cloud-based monitoring and logging service to monitor the performance of a Python application after it has been deployed. Explain how this service helps identify and troubleshoot issues in the deployed application.	10	K2	CO5

36.	a) i)	Explain the cloud shared responsibility model in detail.	5	K2	CO4
	ii)	Infer cloud deployment for application development with merits.	5	K2	CO5

OR

	b) i)	Infer any one popular cloud monitoring tool.	5	K2	CO4
	ii)	Explain any two tools commonly used for managing Python application deployments in the cloud.	5	K2	CO5