

| | | | | | | | | | | | | | | | | | | | |
|-----------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Reg. No. | | | | | | | | | | | | | | | | | | | |
|-----------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

| | |
|----------------------------|--------------|
| Question Paper Code | 13875 |
|----------------------------|--------------|

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2025

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) (10 × 1 = 10 Marks)

Answer ALL Questions

| | Marks | K- Level | CO |
|---|-------|-------------|-----|
| 1. Which of the following is not a cloud deployment model? (a) Public Cloud (b) Private Cloud (c) Distributed Cloud (d) Personal Cloud | 1 | K1 | CO1 |
| 2. Which guiding principle of cloud computing focuses on paying only for what you use? (a) Elasticity (b) Security (c) Pricing and Utilization Efficiency (d) Scalability | 1 | K1 | CO1 |
| 3. Which of the following best describes a Microservice Architecture? (a) A tightly coupled system with all functions in one module (b) A collection of loosely coupled, independently deployable services (c) A legacy monolithic system (d) A static web-based design | 1 | K1 | CO2 |
| 4. In the 12-Factor App methodology, which factor deals with storing configuration information? (a) Config (b) Codebase (c) Build, Release, Run (d) Processes | 1 | K1 | CO2 |
| 5. Which of the following is a key goal of DevOps? (a) Isolating development and operations teams (b) Increasing the software release cycle duration (c) Enhancing collaboration between development and operations (d) Removing automation from software deployment | 1 | K1 | CO3 |
| 6. Which command is used to run a Docker container from an image? (a) docker build (b) docker pull (c) docker run (d) docker stop | 1 | K1 | CO3 |
| 7. Which principle ensures security is incorporated at every phase of the cloud system design? (a) Security by Design (b) Shared Responsibility (c) Least Privilege (d) Continuous Deployment | 1 | K1 | CO4 |
| 8. In the shared responsibility model, which task is typically handled by the cloud provider? (a) Data encryption and access control (b) Physical infrastructure and network security (c) Application configuration (d) User identity management | 1 | K1 | CO4 |
| 9. Which of the following frameworks is commonly used for building cloud-based Python applications? (a) React (b) Flask (c) Laravel (d) Angular | 1 | K1 | CO5 |
| 10. During the deployment phase of a Python cloud application, the main objective is to: (a) Write code for new modules (b) Test application performance (c) Make the application live and accessible to users (d) Design the architecture diagram | 1 | K1 | CO5 |

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

| | | | |
|--|---|----|-----|
| 11. Compare the difference between public and private cloud. | 2 | K2 | CO1 |
| 12. Define Cloud Computing. | 2 | K1 | CO1 |
| 13. Why is Spring Boot suitable for micro services? | 2 | K1 | CO2 |
| 14. How can API integration enhance the performance of microservice-based systems? | 2 | K1 | CO2 |
| 15. Define DevOps and state its main objective. | 2 | K1 | CO3 |

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

13875

- | | | | |
|---|---|----|-----|
| 16. What is meant by containerization? | 2 | K1 | CO3 |
| 17. How can Identity and Access Management (IAM) be applied to strengthen cloud security? | 2 | K1 | CO4 |
| 18. List the cloud monitoring tools. | 2 | K1 | CO4 |
| 19. What are the main stages in developing a Python-based cloud application? | 2 | K1 | CO5 |
| 20. Name any two Python frameworks commonly used for cloud deployment. | 2 | K1 | CO5 |
| 21. List any two principles of Security by Design. | 2 | K1 | CO4 |
| 22. What is the function of Docker Daemon? | 2 | K1 | CO3 |

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

- | | | | |
|--|----|----|-----|
| 23. a) Explain in detail the cloud service and deployment models with suitable diagrams and examples. | 11 | K2 | CO1 |
| OR | | | |
| b) Show the guiding principles of cloud utilization, security, and pricing. How do these principles influence cloud adoption? | 11 | K2 | CO1 |
| 24. a) Utilize the 12-Factor App principles to design a cloud-native application and explain how each factor contributes to scalability and maintainability. | 11 | K3 | CO2 |
| OR | | | |
| b) Develop a conceptual model showing how micro services and API integration can be used to modernize a legacy monolithic application. | 11 | K3 | CO2 |
| 25. a) Explain the Docker architecture and its components. How does containerization simplify application deployment? | 11 | K2 | CO3 |
| OR | | | |
| b) Summarize the DevOps lifecycle and discuss its roles, responsibilities. | 11 | K2 | CO3 |
| 26. a) Identify how cloud monitoring tools can be used to ensure performance and compliance in a multi-cloud environment. | 11 | K3 | CO4 |
| OR | | | |
| b) Apply the concept of Security by Design to develop secure cloud architecture. Illustrate with an example. | 11 | K3 | CO4 |
| 27. a) Explain the steps involved in developing and deploying a Python application in the cloud. | 11 | K2 | CO5 |
| OR | | | |
| b) Illustrate various Python frameworks used for cloud-based application development with suitable examples. | 11 | K2 | CO5 |
| 28. a) Apply the features of Spring Boot and explain how it simplifies the development of Java-based microservices. | 11 | K3 | CO2 |
| OR | | | |
| b) Utilize the concepts of monolithic and distributed systems, and explain with examples. | 11 | K3 | CO2 |