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Question Paper Code: R2303

B.E./B.Tech. DEGREE EXAMINATION, NOV 2025

Professional Elective

R21CSV303 – CLOUD COMPUTING

(Common to CSE, EEE, ECE, BME, AIDS, CSD, CSE(AIML), IOT & CYBER Engineering
Branches)

(Regulations R2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Define the Hybrid Cloud deployment model. CO1- U
2. Analyze the design challenge of ensuring data consistency across distributed storage systems. CO1- U
3. Problem: CO2-App
You are setting up a new data center and are considering implementing virtualization to run multiple workloads on fewer physical servers.
Question:
What is virtualization, and how does it benefit resource utilization in a data center?
4. Problem: CO2-App
You are exploring the advantages of virtualizing your organization's infrastructure.
Question:
What are two key benefits of virtualization in an IT environment?
5. Define Desktop Virtualization. CO1- U
6. Differentiate between Containers and Virtual Machines. CO1- U
7. Problem: CO2-App
You are tasked with creating a Docker image for a web application.
Question:
What is the purpose of a Docker file, and how does it relate to creating a Docker image?

8. Problem: CO2-App
 You are deploying a serverless application where the back-end logic is executed through AWS Lambda, triggered by HTTP requests.
 Question:
 Which AWS services would you use to deploy and manage the serverless application?
9. Define a VM migration attack. CO1- U
10. What is the main goal of Identity and Access Management (IAM)? CO1- U

PART – B (5 x 16= 80 Marks)

11. (a) Describe the differences between traditional distributed system models and cloud system models. CO1- U (16)
 Or
 (b) Discuss the design of storage clouds with the help of a layered architecture diagram. CO1- U (16)
12. (a) Hypervisor Selection for Different Scenarios CO2-App (16)
 Scenario:
 Your company is expanding and needs to set up a virtualized environment to host multiple workloads. You have the option to choose between two types of hypervisors: a bare-metal hypervisor and a hosted hypervisor.
 Problem:
 What are the key differences between a bare-metal hypervisor and a hosted hypervisor, and which one would you choose for a high-performance production environment? Justify your choice.
 Hint: Consider performance, overhead, and deployment scenarios.
 Or
 (b) Virtual Machine Snapshots CO2-App (16)
 Scenario:
 You are working on a project and need to make significant changes to a VM. However, you want the ability to revert back to the previous state if something goes wrong.
 Problem:
 What is a VM snapshot, and how can it be useful in a virtualized environment? What are the limitations of using snapshots for long-term VM management?
 Hint: Consider performance impacts, storage overhead, and snapshot management.

13. (a) Discuss the architecture of virtualization infrastructure and its key components. CO1- U (16)
- Or
- (b) Examine the security implications of using Docker in virtualization infrastructure and recommend best practices. CO1- U (16)
14. (a) Discuss the different cloud deployment models and their characteristics. CO1- U (16)
- Or
- (b) Describe the factors influencing the choice of cloud deployment environment for an organization. CO1- U (16)
15. (a) Shared Responsibility Model in Cloud Security CO2-App (16)
- Scenario:
Your organization is moving workloads to a cloud service provider (CSP). You need to define the responsibilities for both your team and the CSP regarding security.
Problem:
What is the Shared Responsibility Model in cloud security, and how does it differ across IaaS, PaaS, and SaaS models? Provide examples of responsibilities for both the cloud provider and the customer for each model.
Hint: Consider areas like data security, infrastructure management, and access control.
- Or
- (b) Cloud Security Monitoring and Incident Response CO2-App (16)
- Scenario:
Your organization needs to set up cloud security monitoring for critical infrastructure and applications. Additionally, you want to have a solid incident response plan in place in case of a security breach.
Problem:
What are the key steps in setting up cloud security monitoring and incident response in the cloud? How do you detect potential threats, and what actions should be taken when an incident occurs?
Hint: Look into cloud-native monitoring tools, alerting, log analysis, and incident containment.

