

Register Number:.....

**MCA DEGREE EXAMINATIONS: NOV/DEC 2024**

(Regulation 2020)

Third Semester

**MASTER OF COMPUTER APPLICATIONS**

P20CAI3203: Cloud Application Development

**COURSE OUTCOMES**

- CO1:** Design and develop elegant and flexible cloud software solutions.
- CO2:** Manage and deploy a cloud-based application.
- CO3:** Analyze a real-world problem and develop a cloud-based software solution.
- CO4:** Evaluate the deployment of web services from cloud architecture.
- CO5:** Evaluate the security issues related to the development of cloud applications.
- CO6:** Develop services using cloud computing.

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 2 = 20 Marks)**

1. Demonstrate how on-demand provisioning works in a cloud environment by describing a real-world scenario where it would be used. CO1 [K<sub>3</sub>]
2. Define Cloud Computing. CO1 [K<sub>1</sub>]
3. Explain how elastic computing benefits organizations in managing their resources efficiently. CO2 [K<sub>2</sub>]
4. Explain the difference between GET and POST methods in the context of HTTP requests used in Web APIs. CO2 [K<sub>2</sub>]
5. Explain the areas you are responsible for managing in the IaaS cloud service model, such as computing, storage, and networking. CO3 [K<sub>2</sub>]
6. Name two services offered by Microsoft Azure. CO3 [K<sub>1</sub>]
7. Describe the primary purpose of cloud storage and how it differs from traditional storage methods. CO4 [K<sub>2</sub>]
8. Name two popular cloud database services. CO4 [K<sub>1</sub>]
9. Describe the role of firewalls in network security. CO5 [K<sub>2</sub>]
10. Apply the principles of data security to a cloud computing environment by identifying key strategies for protecting sensitive data. CO6 [K<sub>3</sub>]

**Answer all the Questions:-**

**PART B (6 x 5 = 30 Marks)**

11. Explain the key benefits and limitations of cloud computing compared to traditional on-premises computing. CO1 [K<sub>2</sub>]
12. Compare and contrast private cloud and public cloud, highlighting their key differences and appropriate use cases. Additionally, discuss situations where a hybrid cloud solution would be preferred. CO2 [K<sub>2</sub>]
13. As a Cloud Engineer for an e-commerce company experiencing a significant increase in website traffic, which type of cloud computing model (IaaS, PaaS, or SaaS) would you recommend ensuring scalability and high availability of the web portal? Justify your choice with relevant reasons. CO3 [K<sub>3</sub>]
14. Explain the key components of Microsoft Azure's cloud architecture. CO4 [K<sub>2</sub>]
15. As a cloud engineer creating an EC2 instance for a gaming application, what is a security group in AWS, and how would you configure it to ensure secure access for the application? CO5 [K<sub>2</sub>]
16. Describe the key principles of host security and how they contribute to protecting systems from threats. CO6 [K<sub>2</sub>]

**Answer any FIVE Questions**

**PART C (5 x 10 = 50 Marks)**

17. Analyze the key benefits and limitations of cloud computing in comparison to traditional on-premises computing. Discuss how factors such as cost, scalability, security, and performance influence the decision to adopt cloud solutions, and provide example CO1 [K<sub>4</sub>]
18. Explain the differences between IaaS, PaaS, and SaaS models in cloud computing, and describe scenarios where each model would be most appropriate CO2 [K<sub>2</sub>]

19. Demonstrate how to implement Amazon S3 and CloudFront to create a scalable and highly available static website. Describe the steps involved in configuring S3 for storage and CloudFront for content delivery, ensuring optimal performance and availability. CO3 [K<sub>3</sub>]
  
20. Design a scalable and highly available database solution in AWS using Amazon RDS and read replicas. Include detailed steps for configuring the primary RDS instance, setting up read replicas, and ensuring high availability. CO4 [K<sub>4</sub>]
  
21. Illustrate the key concepts of network security by applying them to real-world scenarios. Provide detailed explanations of various network security measures, such as firewalls, intrusion detection systems (IDS), and encryption protocols, along with suitable examples that demonstrate their effectiveness in protecting organizational data. CO5 [K<sub>3</sub>]
  
22. Design a Virtual Private Cloud (VPC) architecture that incorporates both public and private subnets. Include detailed configurations for network access control lists (ACLs) and security group rules to ensure appropriate access and security for resources within each subnet. CO6 [K<sub>5</sub>]

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