


VIT

Vellore Institute of Technology

Final Assessment Test – November 2025

Course: BCSE408L - Cloud Computing

Class NBR(s): 1894/1902/1909/1915/1921

Time: Three Hours

Slot: B1+TB1

Max. Marks: 100

- KEEPING MOBILE PHONE/ANY ELECTRONIC GADGETS, EVEN IN 'OFF' POSITION IS TREATED AS EXAM MALPRACTICE
- DON'T WRITE ANYTHING ON THE QUESTION PAPER

COs	CO Statements
CO1	Design and develop cloud application and deploy it.
CO2	Evaluate the various cloud services and deployment models in the infrastructure
CO3	Apply the various cloud security concepts for application development
CO4	Design and manage cloud services with cloud simulation and various cloud platforms.
CO5	Design and develop AI and IoT applications in the cloud environment.

BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)

Answer ALL Questions

(10 X 10 = 100 Marks)

1. A marketing company has employees working remotely from different cities. They need a reliable way to collaborate on projects, share documents, and communicate without setting up any complex software on their local machines. They need a ready-to-use application over the internet, allowing users to focus on their work instead of managing infrastructure or software updates. Illustrate the best cloud service model that suits the company requirement with justification. Discuss in detail about the challenges involved in the implementation of the suggested model. CO1 BL3
- 2.a) A university offers advanced computer science programs as an online course. The students need access to all the software tools like MATLAB or AutoCAD, along with custom operating systems, multiple programming environments, network simulation tools, and pre-installed libraries. Moreover, some courses require students to modify system settings, run background services, manage virtual networks, and access administrative tools. Illustrate the virtualization type that suits the above requirements and discuss the different ways that the virtualization can be achieved. CO2 BL3

OR

CO2 BL3

2.b) A multinational corporation operates in multiple countries with hundreds of offices. Each office has servers, desktops, storage devices, and networking equipment. The company faces the following challenges:

- I. High operational costs for managing physical servers, desktops, and storage.
- II. Difficulty in ensuring business continuity and disaster recovery.
- III. Underutilization of storage and server resources in different locations.
- IV. Need for secure remote access for employees working from home and branch offices.
- V. Frequent deployment of new applications and updates across all locations.

Identify the types of virtualization the organization can implement to solve these challenges. For each type of virtualization you choose, explain the key benefits and major challenges that the company should consider. Propose a high-level implementation strategy showing how the organization can integrate these virtualization technologies into a single, efficient IT environment.

3.a) Illustrate how amazon virtual private cloud is used to define and configure your own private data center in the cloud. Discuss the Key benefits of using VPC as a private data center.

CO4 BL3

OR

3.b) Discuss the storage systems offered by Google cloud platform that are suitable for storing large amounts of unstructured data with cost-efficient storage classes and integrated security.

CO4 BL3

4. Demonstrate the use of six primary OpenStack components that handle compute, network and storage functions for on-demand virtual machine provisioning. Elaborate the Industrial application of open stack.

CO4 BL2

5. A cloud service provider hosts multiple virtual machines for an online banking application. The provider needs to perform hardware maintenance on one of its physical servers that currently hosts several critical virtual machines responsible for transaction processing and customer sessions. Explain why simply shutting down the virtual machine to perform maintenance is not an ideal option. Suggest a suitable virtual machine migration technique that can be used in this scenario to ensure service continuity and explain the steps involved in it.

CO4 BL4

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| 6. | An enterprise has recently migrated its critical applications to a public cloud platform but is experiencing increased operational costs and poor resource visibility. Explain how implementing a cloud management framework can address these challenges. Outline the components of the framework and their role in cost optimization. | CO3 | BL3 |
| 7. | Compare network-level security and host-level security in cloud computing. Provide a scenario that demands both the security requirements. | CO3 | BL3 |
| 8. | An e-commerce company detects unusual activity on its cloud servers, including repeated login failures and suspicious data transfers. Show how the organization's computer security incident response team would identify, analyzes, and responds to the incidents. Describe the responsibilities of the CSIRT in handling such security incidents. | CO3 | BL2 |
| 9. | A company wants to host its payment processing system on the cloud. Design a service Level Agreement that covers availability, performance, security, support, and remedies for downtime or SLA violations. Justify why each component is necessary for both the cloud provider and the organization. | CO3 | BL6 |
| 10. | Cloud development and management rely on various tools to automate infrastructure provisioning, deploy applications, manage configurations, and ensure scalability. Discuss in detail any five widely used tools in cloud computing that support these activities. Explain their key features and uses in managing cloud environments. | CO5 | BL2 |

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