



**SCHOOL OF COMPUTER SCIENCE AND ENGINEERING**  
**CONTINUOUS ASSESSMENT TEST - I**  
**WINTER SEMESTER 2025-2026**

Programme Name & Branch : B.Tech, BBS  
Course Code and Course Name : CBS3005 Cloud, Microservices and Applications  
Faculty Name(s) : P. Balakrishnan, A.Anny Leema  
Class Number(s) : VL2025260502110, VL2025260504207  
Date of Examination : 29.1.2026  
Exam Duration : 90 minutes  
Maximum Marks: 50

**General instruction(s):**

- Answer All Questions
- M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)
- Course Outcomes (Type the CO statements covered in this question paper. Use the CO number as per the syllabus copy)
  1. Study the basics of cloud computing, cloud models, and its applications.
  2. Understand cloud services and architecture.
  3. Learn how to use Cloud Services and to build applications.

| Q. No | Question                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Module | Marks | CO | BL |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------|----|----|
| 1.a   | A healthcare startup plans to build a cloud-based application that supports patient appointment scheduling, electronic health record (EHR) management, and analytics. The application requires a development environment that enables easy deployment, frequent feature updates, and automatic scalability to handle fluctuating user demand. In compliance with regulatory requirements, sensitive medical data must remain under strict organizational control, while non-sensitive components should be accessible over the internet. Identify the most appropriate cloud service model and justify your choice. Also, recommend a suitable cloud deployment model and explain how it satisfies both scalability and security requirements.                                                                                                                                | 1      | 5     | 1  | 1  |
| b.    | Fill in the Blanks with the Correct Type of Computing Model <ol style="list-style-type: none"><li>i) A university examination system using a single central server for processing and storage represents ____ computing.</li><li>ii) A global search engine handling billions of queries using thousands of interconnected servers represents ____ computing.</li><li>iii) A computing model in which multiple tightly coupled computers work together as a single system to provide high performance and reliability represents ____.</li><li>iv) A research project that combines computing resources from geographically distributed universities for intensive scientific computation represents ____ computing.</li><li>v) A computing model that moves cloud services closer to end devices using an intermediate processing layer represents ____ computing.</li></ol> | 1      | 5     | 1  | 1  |
| 2.    | A national-scale digital commerce platform was initially built as a single unified application. As the platform scaled to millions of users with expanding functionalities, it began experiencing frequent peak-time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        |       |    |    |



Vellore Institute of Technology  
(Deemed to be University)

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CONTINUOUS ASSESSMENT  
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|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|---|---|
|    | downtime, delayed feature releases, risky deployments, inefficient scaling, and cascading system failures. With reference to the above scenario, answer the following with suitable diagrams. <ul style="list-style-type: none"><li>Analyze the architectural characteristics of the existing system that contribute to these issues.</li><li>Recommend a more suitable architectural approach that enables independent scalability, safer deployments, and better fault tolerance.</li><li>How the application structure and data management would differ in the proposed approach compared to the current system.</li></ul>                                                                                                                                                                                                                         | 2 | 10 | 2 | 4 |
| 3. | An e-commerce system is to be implemented using Java-based microservices, where the Product, Order, and Payment services run as independent Spring Boot applications on different ports. When a user places an order, the Product Service invokes the Order Service, which then communicates with the Payment Service to complete the request. Design and implement these microservices by defining appropriate REST endpoints and demonstrate inter-process communication using REST Template or WebClient by programmatically invoking one service from another.                                                                                                                                                                                                                                                                                    | 2 | 10 | 2 | 6 |
| 4. | An enterprise cloud application comprises multiple independent services that need to communicate asynchronously in a loosely coupled manner, supporting real-time event notifications as well as reliable message handling during temporary service failures. The application also requires automated execution of tasks at specific times and at regular intervals without managing servers. <ul style="list-style-type: none"><li>Identify and justify the appropriate cloud application integration services to implement asynchronous communication and event-driven interactions among the services.</li><li>Recommend a suitable scheduling mechanism to support both time-based and recurring task execution.</li><li>Draw a neat architecture diagram illustrating the interaction among the services and the scheduling mechanism.</li></ul> | 3 | 10 | 3 | 4 |
| 5. | An enterprise is planning to deploy and continuously update a cloud-based application across development, testing, and production environments. The organization prefers a managed application deployment platform that can automatically handle application provisioning, scaling, and environment configuration, along with template-based infrastructure provisioning to ensure consistency across environments. The IT team is evaluating deployment capabilities offered by Amazon Web Services and Microsoft Azure. Compare the deployment services provided by AWS and Azure for automated application deployment and template-based infrastructure provisioning using suitable diagrams.                                                                                                                                                      | 3 | 10 | 3 | 2 |

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