

VIT

Vellore Institute of Technology

Reg. Number 22BLE135

Continuous Assessment Test I – Jan 2025

Programme	B.Tech. CSE	Semester	Winter 24-25
Course Code & Course Title	BCSE408L & CLOUD COMPUTING	Slot	G1+TG1
Faculty (s)	Dr. Anusooya G Dr. Tamilarasi K Dr. Srisakthi Saravanan	Class Nbr(s)	CH2024250502163 CH2024250502160 CH2024250502165
Time	1 ½ Hours	Max. Marks	50

General Instructions:

- Write only your registration number on the question paper in the box provided and do not write other information.
- Only non-programmable calculator without storage is permitted

Answer ALL Questions

Q.No	Question Description	Marks
1.	<p>A pharmaceutical company, PharmaSys Innovations, specializes in drug research, development and distribution. The company manages a vast amount of sensitive data including clinical trial results, patient records, and supply chain information, using on premise data storage systems. To improve data management, enhance collaboration across global research teams and accelerate drug development, the company is considering migrating, its operations to a cloud-based platform.</p> <p>a. How can cloud technology support PharmaSys Innovations in improving its research and business processes? (5 marks)</p> <p>b. What potential challenges might the company face when transitioning to a cloud-based infrastructure, and how could these affect its operations? (5 marks)</p>	10
2	<p>Jack and his friends had started a start-up in providing various services in E-Commerce websites like developing web applications, providing recommendations to the user, real-time GPS tracking systems, financial services (UPI, Cards Transactions), storage, flexibility and reliability for the customers. They manage the entire service 24/7.</p> <p>a. Since they run a start-up, they are in a position to use the cloud services for handling various customer requirements. Explain various service models required for the above scenarios and also identify one suitable service model which will be suitable to handle the entire process with justifications. (7 Marks)</p> <p>b. Identify and justify the best deployment model for the same. (3 Marks)</p>	10
3	<p>Cornell's University library serves 80,000 students and faculty and receives close to 2.5 million hits per day from the entire world, with 24 million papers downloaded per month. Cornell's priority was to modernize this important educational and research tool. Research is an important factor in maintaining the reputation of Cornell University as an innovative environment for students and faculty. Consider a scenario that Person A being a cloud</p>	10

broker and Cornell's is seeking their help to get access to the best of cloud services.

- a. Create a model between 2 different services say CSP-X and CSP-Y, add with various categories of features for both cloud service providers in a tabular format with respect to cost and time for compute, storage, network, security, load balancing, scheduling etc. (5 Marks)
- b. Suggest and justify the best model among CSP-X and CSP-Y for different situation suitable for Cornell's. (5 Marks)

4. Consider the scenario where John is the IT manager of a growing e-commerce company. The company has been expanding rapidly and its data storage needs have increased significantly. The company currently has multiple physical storage systems spread across different departments, and each department manages its own storage resources. As a result, John is facing challenges such as inefficient storage utilization, high operational costs, and the complexity of managing multiple storage devices. Additionally, there have been instances where the storage systems are over-provisioned in some departments and under-provisioned in others, leading to resource bottlenecks. Given this scenario, the company is considering implementing storage virtualization to address these issues.

10

- a. Tabulate the benefits of storage virtualization so as to convince the management in moving towards the virtualization. (5 Marks)
- b. Analyze and address the challenges that can be associated with implementing the storage virtualization. (5 Marks)

5. A large financial services company has a traditional on-premises data center with several physical servers, networking equipment, and storage devices. As part of a strategic initiative to stay competitive and agile, the company wants to adopt a more flexible and scalable IT infrastructures that can better support dynamic workloads, improve operational efficiency, and reduce capital expenditures. Additionally, the company is facing challenges in scaling its data center resources quickly and efficiently to meet the demands of fluctuating business needs, and the existing infrastructure is becoming costly to manage due to its complexity. Given this scenario, the company is considering transitioning to an automated virtualized data center model.

10

- a. Illustrate the key components of the model with a neat sketch. (5 Marks)
- b. Evaluate the benefits that the company will incur by transitioning to the automated model. (5 Marks)

VIT

Vellore Institute of Technology

Reg. Number

Continuous Assessment Test 1 - Jan 2025

Programme	B.Tech. CSE	Semester	Winter 24-25
Course Code & Course Title	BCSE408L & CLOUD COMPUTING	Slot	G2+TG2
Faculty (s)	Dr. Srisakthi Saravanan Dr. Palani Thanaraj K Dr. Sharmiladevi S	Class Nbr(s)	CH2024250502193 CH2024250502166 CH2024250502167
Time	1 ½ Hours	Max. Marks	50

General Instructions:

- Write only your registration number on the question paper in the box provided and do not write other information.
- Only non-programmable calculator without storage is permitted

Answer ALL Questions

Q.No	Question Description	Marks
1.	<p>A large financial institution is looking to modernize its IT infrastructure to ensure maximum control over sensitive customer data, minimize latency for critical transactions, and meet strict regulatory requirements. They are considering a solution that allows them to maintain full ownership of their hardware and software resources while still benefiting from scalable and flexible computing capabilities.</p> <p>(a) Analyze the key features of a cloud deployment model that aligns with their requirements. (5 marks)</p> <p>(b) Discuss how this deployment model ensures data sovereignty and high performance for time-sensitive operations. (5 marks)</p>	10
2	<p>A startup specializing in developing AI-powered healthcare applications is looking to streamline its software development process. They want to focus on building and deploying their applications without worrying about managing underlying components like servers, storage, or operating systems. Additionally, they need seamless integration with third-party APIs and tools for analytics and machine learning.</p> <p>a. Identify the cloud service model that best aligns with their requirements. (3 marks)</p> <p>b. Explain how this model allows the startup to focus on application development while minimizing operational overhead. (3 marks)</p> <p>c. Discuss the key benefits and limitations of this model compared to other cloud deployment options. (4 marks)</p>	10
3	<p>A global e-commerce company is planning to migrate its operations to the cloud to improve scalability, reduce costs, and enhance customer experience. They are evaluating different cloud architectures and business models to ensure alignment with their long-term goals. The company wants a solution that ensures data security and provides flexibility in</p>	

resource allocation.

10

- a. Analyze a cloud architecture framework and explain how it can guide the company in designing a scalable and secure cloud environment. (3 marks)
- b. Identify the business models that align with the company's need for cost efficiency and flexibility. (3 marks)
- c. Discuss how the chosen architecture and business model can address key challenges while supporting global operations. (4 marks)

4 A global marketing agency, CreativeEdge Solutions, has offices in multiple locations, including New York, London, Mumbai, and Tokyo. The agency specializes in delivering high-quality digital marketing campaigns and creative content for clients worldwide. However, its growth has introduced several challenges in managing IT resources and ensuring seamless collaboration across teams. Some of the challenges include workforce distribution, Remote access, Collaboration Across Time Zones, security, Flexibility, streamlined experience and scalability.

10

- a) Identify the suitable virtualization technique that will help the company in overcoming its challenges and justify your choice. (5 marks)
- b) Discuss the benefits and challenges of the chosen virtualization technique. (5 marks)

5 An e-commerce company, ShopEase Online, has been experiencing rapid growth due to an increase in customer demand and the expansion of its product catalog. The company operates an online marketplace that serves millions of users, requiring reliable and scalable IT infrastructure to handle high traffic and ensure seamless operations. The company currently faces the following challenges like Underutilized Physical Servers, Scalability Issues, Disaster Recovery and Backup.

10

- a) Identify the suitable virtualization technique that will help the company in overcoming its challenges along with its benefits. (4 marks)
- b) Discuss the different types of the chosen virtualization technique. (6 marks)