Continuous Assessment Test (CAT) – II   OCTOBER 2025

Programme	:	B.Tech Computer Science and Engineering	Semester	:	Fall 2025-26		
Course Code & Course Title	:	BCSE301L – Software Engineering	Class Number	:	CH2025260100696 CH2025260100697 CH2025260100693 CH2025260102455 CH2025260102456 CH2025260102457 CH2025260100694		
Faculty	:	Dr. ALOK CHAUHAN Dr. LAKSHMI HARIKA PALIVELA Dr. JAYANTHI R Dr. K PARKAVI Dr. R ELAKYA Dr. KUMARAN K Dr. N GANESH	Slot	:	E2 + TE2		
Duration	:	1 Hour 30 Minutes	Max. Mark		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	Sub Sec.	Description	Marks	CO	BT Level
1		For a virtual reality gaming platform, UML use case diagrams to outline player interactions, game state management, and multiplayer synchronization. Behavioral models reveal timing constraints in real-time rendering, with dependencies on GPU resources.	10	3	Analyze
	A	Design a class diagram for given scenario. (5 marks)			
	B	Generate state chart diagram for game lifecycle management. (5 marks)			
2		You are designing a software system to manage the Indian Cricket Team's operations, including player statistics, match schedules, training sessions, fitness monitoring, and performance analysis.l	10	3	Understand
	A	Design the modules of this system ensure high cohesion. Identify and explain the different types of cohesion that can be applied in your module design, providing specific examples from Indian cricket. (5 marks)			
	B	Explain how high cohesion improves the system's maintainability, scalability, reliability, testability, and reusability. (5 marks)			

			Marks		
3		The Library Management System (LMS) allows users to search, borrow, and return books. The Level 0 Data Flow Diagram (DFD) for this system shows the following flow: • Input data: user credentials, book search queries, and transaction requests (borrow/return). • Transformation: login validation, book availability check, transaction update in the inventory database. • Output data: confirmation messages, due date receipts, and book availability status.	10	3	Apply
	A	Define transform mapping and explain its significance in system design. (2 Marks)			
	B	Apply transform mapping to the LMS and represent the mapping with an appropriate diagram. (8 Marks)			
4		An airline is developing an Online Flight Booking System with features: • User registration & login • Search for flights by source/destination/date • Select seats and confirm booking • Make payments via credit card/UPI/wallet Receive e-ticket and booking confirmation	10	4	Understand
	A	As part of the quality assurance team, you are required to design a comprehensive test plan for the above system. In your response, outline the objectives of testing, entry/exit criteria and classify the roles of the testing team. (5 marks)			
	B	Identify test conditions for: a) Flight Search Module b) Seat Selection & Payment (3 marks)			
	C	Write at least 5 test cases for the "Seat Selection" feature. (2 marks)			
5		Swiggy collects massive data from customer orders, restaurant menus, delivery tracking, payments, and reviews. This data is processed in a Big Data system to provide restaurant recommendations, predict delivery times, and detect fraudulent activities. The QA team needs to ensure the data is accurately ingested, processed and analysed, while maintaining high performance and data quality.	10	5	Apply
	A	Explain the Big Data Testing Strategy for this scenario, including functional testing, performance testing, and data quality checks, with suitable examples from the Swiggy. (5 marks)			
	B	Select a specific functionality of the Swiggy application and explain how Mutation Testing can be applied, providing examples of possible mutations and how they help verify the effectiveness of existing test cases. (5 marks)			

**********All the best **************