

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN  
(AUTONOMOUS)

(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)

Chromepet, Chennai - 600 044.

B.Sc.Computer Science - END SEMESTER EXAMINATIONS - APRIL 2025

SEMESTER - VI

**22UCSCT6010 - Software Engineering and Testing**

Total Duration : 2 Hrs.30 Mins.

Total Marks : 60

**Section B**

Answer any **SIX** questions ( $6 \times 5 = 30$  Marks)

1. Explain the core phases of waterfall model and describe how it differs from the Unified process in terms of flexibility.
2. Create a behavioural model for a food delivery app using UML state diagrams. Highlight key states (eg Order placed, preparing, dispatching) and transitions.
3. Evaluate the use of Object Control Language in component level design. How does it improve precision in defining component behaviour?
4. Apply black box testing techniques to test a flight booking system's payment gateway. Design two test cases covering equivalence partitioning and boundary value analysis.
5. Define the term Business process engineering. Explain its role in aligning software development with Organizational goals.
6. Compare scenario based modelling and flow oriented modelling in requirement analysis. When would you prioritize one over the other.
7. Design a component level interface for a LOGIN module in a banking system. Specify input, validation, error handling and integration with other modules.
8. Propose a comprehensive test strategy for an AI driven chat bot integrating validation testing, system testing and debugging methods. Justify how your strategy ensures reliability.

**Section C**

Answer any **THREE** questions ( $3 \times 10 = 30$  Marks)

9. Apply the Incremental process model to develop a software project for an online education platform. Describe the phases involved and explain how this model ensures flexibility and adaptability in meeting evolving requirements.

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10. Analyze the challenges in eliciting requirements for a smart home automation system. Propose solutions to address these challenges using techniques like use case development and negotiation.
11. Design and synthesize an analysis model for an e-commerce application using data modelling concepts, object-oriented analysis, and flow-oriented modelling. Discuss how these models interact to meet functional requirements.
12. Evaluate the component-level design of a payment gateway for an e-commerce platform using object constraint language (OCL). Specify preconditions, post-conditions, and invariants for transaction processing.
13. Propose a comprehensive testing strategy for a machine learning-based fraud detection system. Include black-box testing, white-box testing, and debugging techniques to ensure reliability and scalability.

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