


VIT

Vellore Institute of Technology

Final Assessment Test – November 2025

Course: IASWE102 - Software Engineering

Class NBR(s): 7794 / 7796 / 7798 / 7999

Time: Three Hours

Slot: D2+TD2+TDD2

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	Explore software engineering foundations and key concepts.
CO2	Develop skills for efficient software system design and implementation.
CO3	Apply engineering practices and industry standards.

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. Explain the Agile Software Development Process in detail. Describe its key phases and explain how it ensures flexibility in software projects. CO1 BL2
2. An Online Banking System allows customers to perform financial transactions such as money transfers, checking balances, and paying bills securely through the internet. Identify five functional and non-functional requirements for the Online Banking System and explain them in detail. CO1 BL3
3. An educational institution plans to develop an Online Examination System to conduct tests for students remotely. The system should allow students to log in, take tests within a time limit, automatically evaluate answers, and display results instantly. Explain how the fundamental design concepts of software engineering can be applied to design the Online Examination System. Analyze how these concepts ensure high quality, maintainability, and reliability of the system. CO1 BL3
4. An organization plans to design an Online Food Delivery Application that allows users to browse restaurants, place orders, make payments, and track deliveries in real time. As a software architect, you are asked to recommend suitable architectural styles and patterns for this system. Explain the various architectural styles and patterns that can be applied to design the Online Food Delivery Application. Analyze how each style supports scalability, maintainability, and performance of the system. CO1 BL3
5. An Online Shopping Cart System allows a user to add items to the cart, check out, and make payments. If the user's total purchase amount exceeds ₹5000, a 10% discount is applied; otherwise, the user pays the full price. If payment is successful, the order is confirmed; otherwise, the system displays an error message. The logic of the Online Shopping Cart System can be expressed as:
 - i. Start
 - ii. Input total amountCO2 BL6

- iii. If amount > 5000 then
- iv. Apply 10% discount
- v. Else
- vi. No discount
- vii. Proceed to payment
- viii. If payment successful then
- ix. Display "Order Confirmed"
- x. Else
- xi. Display "Payment Failed"
- xii. End

Explain the concept and procedure of Basis Path Testing using the above case study. Construct the Control Flow Graph (CFG), calculate the Cyclomatic Complexity, and derive independent paths for testing.

6. A software development company is building an online banking application. The system involves modules for user authentication, fund transfers, and transaction records. During project planning, the project manager identifies potential risks such as security breaches, schedule delays, budget overruns, and requirements changes. Answer the following based on the given case study:
- CO3 BL5
- a) Explain what risk management means in the context of software engineering. [2]
 - b) Identify four possible project risks from the case study. [2]
 - c) Categorize the identified risks as technical, organizational, or external. [2]
 - d) Justify which of the identified risks is the most critical and why? [2]
 - e) Propose a risk mitigation plan for the most critical risk. [2]
7. Explain the Capability Maturity Model Integration (CMMI). Discuss its levels, process areas, and significance in software process improvement with an example. CO3 BL1
8. Discuss the key principles and advantages of Agile Software Development. How does Agile differ from traditional software development models? CO1 BL2
- 9.a) A software company is developing an online examination system. The project activities, durations, and dependencies are: CO1 BL6

Activity	Duration (days)	Predecessors
A – Requirement Analysis	5	–
B – Design	3	A
C – Database Setup	4	A
D – Module Coding	6	B, C
E – Testing	4	D
F – Deployment	2	E

Using CPM, construct the network diagram, determine the critical path, calculate the minimum project duration, and explain the significance of the critical path in project management.

OR

- 9.b) An Online Food Ordering System allows customers to order food from restaurants. One of the main use cases is "Place Order". CO1 BL6

i. Draw a Use Case Diagram showing the "Place Order" use case with relevant actors. [5]

ii. Draw a Sequence Diagram for the "Place Order" use case showing interactions between the customer, system, and restaurant. [5]

- 10.a) A software company is developing an online banking system that requires high security, reliability, and scalability. The requirements are complex, and the system must evolve based on feedback from different stakeholders. Explain how the Spiral Model can be applied to develop this online banking system. Identify the phases, risks, and iterative approach, and justify why the Spiral Model is suitable for this project? CO1 BL2

OR

- 10.b) A software company is tasked with developing a Library Management System (LMS) for a university. The system should allow students to search books, issue/return books, and manage fines. The requirements are well-defined and unlikely to change frequently. Explain how the Waterfall Model can be applied to develop this Library Management System. Discuss each phase, its activities, advantages, and limitations. Justify why the Waterfall Model is suitable or not suitable for this project? CO1 BL2

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