



VIT

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

REG.NO.: 24

SLOT: E2+TE2

Session: II

SCHOOL OF COMPUTER SCIENCE ENGINEERING AND INFORMATION SYSTEMS
CONTINUOUS ASSESSMENT TEST - II
FALL SEMESTER 2026-2027

Programme Name & Branch : B.Tech (CSE - Artificial Intelligence and Data Engineering)
: B.Tech (CSE - Cyber Security)
Course Code and Course Name : BCSE301L - Software Engineering
Faculty Name(s) : Prof. BALA GANESH N, Prof. ASHA N.
Class Number(s) : VL2026270102561, VL2026270102566
Date of Examination : 01-10-2026
Exam Duration : 90 minutes
Maximum Marks: 50

Course Outcomes:

CO3- Perform Requirements modelling and apply appropriate design and testing heuristics to produce quality software systems.

CO4 - Demonstrate the complete Software life cycle activities from requirements analysis to maintenance using the modern tools and techniques

Q. No	Answer All Question	M	CO
1.	Scenario: 1 A hospital plans to develop an AI-Powered Smart Healthcare System that allows <u>patients</u> to register, search for doctors, book and cancel appointments, make <u>online payments</u>, and access <u>electronic health records</u>. <u>Doctors</u> can view <u>patient histories</u>, conduct <u>online or in-person consultations</u>, enter diagnoses, prescribe medicines, and upload medical reports. The system uses AI to analyze symptoms and provide preliminary health recommendations before the consultation. Patients can also upload laboratory reports and receive medication and appointment reminders. An <u>administrator</u> manages patients, doctors, departments, appointments, and system reports. The system sends notifications to patients and doctors regarding appointment confirmations, cancellations, and reminders. Design a UML Use Case Diagram for the system. Identify all relevant actors and use cases, and represent appropriate <<include>>, <<extend>>, and generalization relationships wherever applicable.	10	3
2.	Based on the AI-Powered Smart Healthcare System described in the given Scenario: 1 of Question No.1. Design a UML Class Diagram for the system. Identify the major classes, their important attributes and operations, and establish appropriate relationships such as association, inheritance, generalization, aggregation, and composition.	10	3
3.	An Online Food Delivery System allows a customer to place an order through a mobile application. The system verifies the customer, checks restaurant availability, confirms item availability, processes online payment, and assigns a delivery partner. If payment fails, the customer is asked to retry or cancel the order. If any ordered item becomes unavailable, the customer can modify or cancel the order. The delivery partner repeatedly updates the order status until the order is delivered. Design a UML Sequence Diagram showing the complete interaction for this scenario. Clearly represent the participating objects, messages exchanged, activation flow, and appropriate alternative/conditional and looping interactions wherever required.	10	3



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Consider the following three modules from an Online Shopping System:

Module A: OrderModule

```
void createOrder() {
    // Create new order
}

void calculateTotal() {
    // Calculate order amount
}

void sendEmail() {
    // Send order confirmation email
}
```

Module B: CustomerModule

```
void addCustomer() {
    // Add customer details
}

void updateCustomer() {
    // Update customer details
}

void printInvoice() {
    // Print invoice
}
```

Module C: PaymentModule

```
void makePayment() {
    // Process payment
}

void updateOrderStatus() {
    // Update order status
}

void sendSMS() {
    // Send SMS notification
}
```

- Identify the cohesion issue in each of the three modules and explain why the modules do not have proper cohesion. (3 Marks)
- Identify the coupling issue that may arise between these modules when they directly depend on each other's functions. Explain with an example. (2 Marks)
- Refactor the above modules to achieve high cohesion and low coupling. Show the improved module structure with suitable functions. (5 Marks)

5. Based on the Online Food Delivery System described in the given **Scenario: 1 of Question No. 3**
Design 10 test cases for the Order Placement component of the system. The test cases should cover both valid and invalid scenarios.
For each test case, specify the following: Test Case ID, Test Scenario, Preconditions, Test Data/Input, Steps to Execute, Expected Result, Actual Result, Test Status.

10 3

10 4 4
