

 <b>VIT-AP</b> UNIVERSITY	<b>Continuous Assessment Test - 1   Fall Semester (2025-26) - August 2025</b>	
	Maximum Marks: 50	Duration: 90 Minutes
Course Code: <b>SWE2008</b>	Course Title: <b>Object Oriented Analysis and Design</b>	
Set No: <b>2</b>	Exam Type : <b>Closed Book</b>	School: <b>SCOPE</b>
Date: <b>18/08/2025</b>	Slot: <b>A1</b>	Session: <b>FN</b>
<b>Keeping mobile phone/smart watch, even in 'off' position is treated as exam malpractice</b>		
<b>General Instructions if any</b> 1. "fx series" - non Programmable calculator are permitted : NO 2. Reference tables permitted : NO		

**Answer ALL Questions, Each Question Carries 10 Marks (5×10=50 Marks)**

- Design the system architecture for an Inventory Management System using the 4+1 View Model. The system should support operations such as adding new stock items, updating quantities, tracking inventory levels, generating alerts for low stock, and managing supplier information. **(10 M)**
- You have been assigned the task of designing a comprehensive online shopping platform for an office stationery company seeking to expand its e-commerce presence. The platform should support the sale of a wide range of products, enable user account creation for tracking purchases, and integrate a payment gateway for seamless payment processing. As part of the system design, consider various architectural perspectives and apply appropriate principles of UML modeling to effectively analyze the problem and develop a scalable, maintainable solution. Support your principles with suitable example. **(10 M)**
- Explain the conceptual UML model for a private long-route bus ticket reservation system, specifically for buses operating from Vijayawada. The system should support functionalities such as viewing available routes and schedules, booking and cancelling tickets, assigning seats, and managing passenger details. Clearly explain how the model captures the essential structure and behavior of the reservation process. **(10 M)**
- There is an Old Age Home managed by a Charitable Trust. They have a system which manages resident profiles, medical records, activity planning and caregiver assignments. Caregivers are responsible for the daily task of medication and assisting daily activities. Residents have their own profile, medical history and preferences for daily activities. Daily activities are planned and scheduled by an activity coordinator. You have given the task to design and develop a class diagram for this Old Age Home. **(10 M)**
- Consider a Railway Ticket Reservation System that manages different user roles: Passenger and Staff. Both roles share common attributes such as name, contact details, and login credentials, but differ in functionality Passengers can book and manage tickets, while Staff can update train schedules and oversee reservations. The system also handles various train types, such as Express, Local, and Superfast, each inheriting common attributes like train number, route, and capacity from a base Train class, while adding specific features like speed category or onboard services. Additionally, the system supports multiple ticket booking channels, including Web Portal, Mobile App, and Counter Booking.



Each channel follows a standardized booking workflow. Using this scenario, illustrate how inheritance and interface implementation can be modeled in a UML class diagram. Show how different train types inherit from a common Train class, and how various booking channels implement a shared BookingChannel interface. Clearly indicate the relationships between classes and interfaces. Explain how this structure enhances code reusability, flexibility, and clarity in system design.

(10 M)

### QP MAPPING

Q. No.	E/A/T	Module Number	Marks	BL	CO Mapped	PO Mapped	PEO Mapped	PSO Mapped
Q1	E	1	10	3	1	1,2,3,9,10	-	1
Q2	E	1	10	3	1	1,2,3,9,10	-	1
Q3	A	1	10	3	1	1,2,3,9,10	-	1
Q4	A	2	10	3	2	1,2,3,4,5,9,10	-	1, 2
Q5	T	2	10	3	2	1,2,3,4,5,9,10	-	1, 2