



VIT

Vellore Institute of Technology
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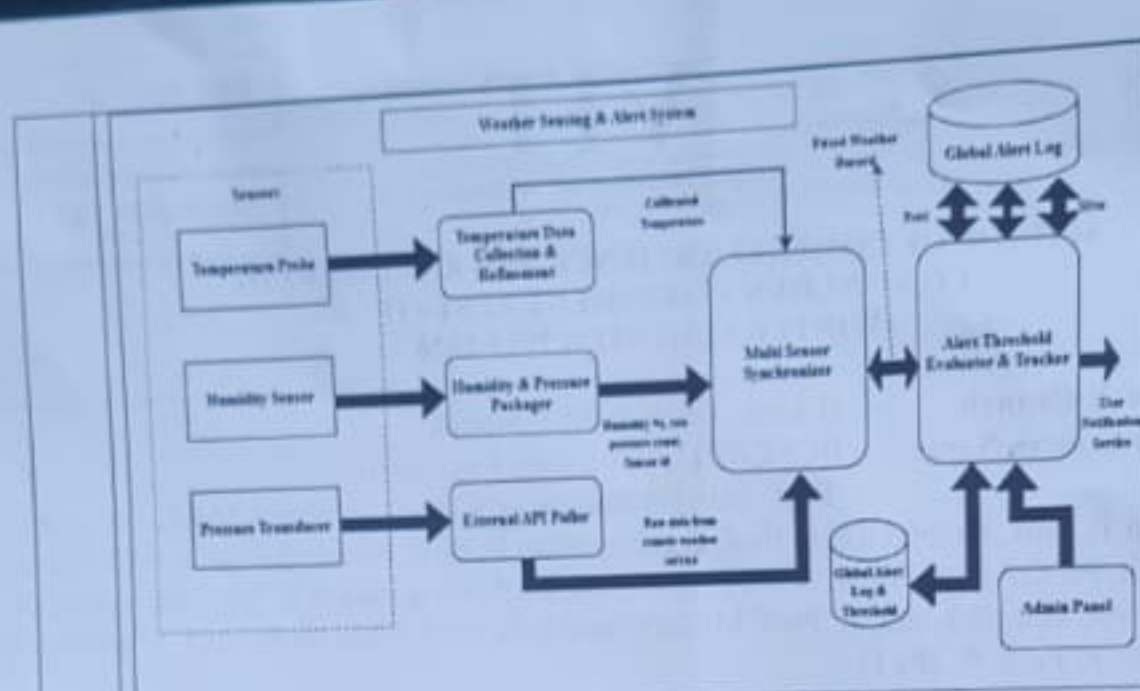
SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
CONTINUOUS ASSESSMENT TEST - II
WINTER SEMESTER 2025-2026

Programme Name & Branch : B.Tech (CSE) & ALL branch
Course Code and Course Name : BCSE301L & Software Engineering
Faculty Name(s) : Prof. Margret Anouncia S, Prof. Shashank Mouli Satapathy, Prof. Chellatamilan T, Prof. Shobha Rekh, Prof. Senthilnathan P, Prof. Naveenkumar J, Prof. Ushus Elizebeth Zachariah, Prof. Anand Bihari, Prof. Prabin S M, Prof. Sivaprakash S, Prof. Krishnaraj N, Prof. Baskaran P, Prof. Ranjithkumar S, Prof. Misha Chandar B, Prof. Manjula R, Prof. Ebenezer Juliet S, Prof. Swarnalatha P, Prof. Ajitha D
Class Number(s) : VL2025260501367, 1387, 1389, 1390, 1392, 1406, 1417, 1420, 1422, 1424, 1428, 1460, 1489, 1499, 2274, 3715, 3716, 4698
Date of Examination : 15-03-2026
Exam Duration : 90 minutes **Maximum Marks: 50**

Answer All Questions

- M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level
- Course Outcomes: CO3 - Perform Requirements modelling and apply appropriate design and testing heuristics to produce quality software systems.

Q. No	Question	M	CO	BL
1.	Assume a Weather Sensing & Alert System that periodically collects raw temperature, humidity, and pressure data from local sensors and remote pressure data from an external API. Each input is independently pre-processed: temperature is calibrated, humidity normalized, and pressure values prepared and formatted. The Multi Sensor Synchronizer then aligns timestamps, verifies completeness, and produces a unified Fused Weather Record. This record is compared against configured thresholds by the Alert Threshold Evaluator. If no limits are exceeded, the record may be logged; if any threshold is violated, the system generates an alert, stores it, notifies users, updates the Admin Panel, and returns to idle. a. Create an activity table consisting of events, states and actions relevant to the given scenario. [3M] b. Generate an Activity Diagram for the identified states and its transitions as per table created in the section a. [5M] c. What is the purpose of the fork nodes and swimlane in the activity diagram. [2M]	10	3	4
2.	Consider the scenario given in question no 1. a. Identify the different components from the scenario [3M] b. Construct a repository-based architecture for the scenario. [5M] c. What are the disadvantages of constructing repository architecture for this real time system. [2M]	10	3	5
3.	Consider the sample architecture of weather sensing and alert system as given.	10	3	5



Analyse the architecture and determine the coupling between the modules and justify it as tabulated.

Module Interactions	Type of Coupling	Justification
a. Sensors to Temperature Data Collection & refinement		
b. Temperature Data Collection & refinement to Multi sensor Synchronizer		
c. Humidity & Pressure Packager to Multi sensor Synchronizer		
d. External API Poller to Multi sensor Synchronizer		
e. Alert Threshold Evaluator & Tracker to Global Alert Log		

4.	a. In today's software development scenario, teams often use AI-assisted code generation tools (like Copilot or ChatGPT-based coding assistants). However, structured audit processes are still widely used for verification. List the benefits of conducting audits in this scenario to deal specifically with the compliance gaps, ethical concerns, maintainability issues. Tabulate your answer with a suitable example use cases for each issue. [5M] b. Assume that you are a part of a cybersecurity company which develops mostly AI-Generated code. The generated code is functional but poorly documented and difficult to interpret. Management decides to cancel all audit and rely solely on test design as the main verification technique. To address this, generate a test design. [3M] c. Testing cannot fully replace audits. Give any two reasons. [2M]	10	3	2
5.	a. Design a fully functional user interface dashboard for the software application described in Question 1. The dashboard should incorporate standard Graphical User Interface (GUI) characteristics, including layout structure, visual hierarchy, navigation elements, widget placement, and interaction components. [6M] b. Identify and annotate the specific areas of your dashboard design where key user-interface design principles—namely user familiarity, consistency, recoverability, user diversity, and user guidance—have been applied. Provide a brief technical justification for each annotated portion. [4M]	10	3	6