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

VIT School of Media Arts and Technology (VSMART)
Re-CONTINUOUS ASSESSMENT TEST - II
WINTER SEMESTER 2024-2025

SLOT: B1+TB1

Programme Name & Branch	: B. Tech All
Course Code and Course Name	: CSI3032, Advances in Pervasive Computing
Faculty Name(s)	: DR. SUKANTA GHOSH, DR. KONATHAM SUMALATHA, DR. MANOOV R
Class Number(s)	: VL2024250502118, VL2024250502108, VL2024250502113
Date of Examination	: 07 April, 2025, (17:00 – 18:30)
Exam Duration	: 90 minutes **Maximum Marks: 50**

General instruction(s):

- Answer All Questions
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)
- Course Outcomes (The CO statements covered in this question paper. The CO number as per the syllabus copy)
  2. Evaluate efficiency trade-offs among alternative communication models for pervasive computing applications.
  3. Comprehend advanced pervasive computing applications and technologies from the basics of pervasive computing.
  1. Describe pervasive devices hardware, platform and other computing

Q. No	Question	M	CO	BL
1.	A hospital uses a TOA-based indoor tracking system to monitor the location of medical equipment. Three sensors are installed at different corners of a 50m × 50m room: Sensor A at (0,0) Sensor B at (50,0) Sensor C at (0,50) A hospital bed with an attached tracking tag sends a signal, and the sensors record the following arrival times: Sensor A: 0.2 microseconds Sensor B: 0.3 microseconds Sensor C: 0.35 microseconds a. Calculate the distance of the hospital bed from each sensor. b. Identify the approximate location of the hospital bed in the room.	10	2	3
2.	Researchers use AoA-based tracking to locate a tagged wild animal in a forest. Two monitoring towers record the signal angles: Tower 1 at (0,0) detects an AoA of 30°. Tower 2 at (2000,0) detects an AoA of 60°. Calculate the approximate location of the animal.	10	2	3

REG.NO.:

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3.	A smart city is implementing an AI-driven adaptive system across multiple domains, including traffic management, healthcare monitoring, smart home automation, fraud detection, and personalized education. The system must make real-time decisions based on various contextual factors. Identify best contextual modelling methods for each domain. Which model would you recommend with valid justifications?	10	3	4
4.	Discuss in detail various context reasoning models required to implement Smart home system with examples.	10	3	4
5.	A multinational company is exploring the use of wearable devices to enhance workplace productivity and employee wellness. The company has employees who work both in an office setting and in more physically demanding roles (e.g., factory workers, delivery drivers). The HR department wants to ensure that wearables can boost productivity, improve health, and keep employees safe. (a)List the wearable devices used in this scenario. How can wearables be used to improve employee wellness and engagement? (b)How might smart wearables enhance efficiency and collaboration, especially for employees in technical fields like engineering or logistics? (c) What are the potential challenges and drawbacks of implementing wearables across such a diverse workforce, and how could those be mitigated?	10	1	4

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