Continuous Assessment Test (CAT) –II- APRIL 2024

Programme	:	B.Tech (ECE/ECM/CPS/AI&ML./AIR)	Semester	:	WS 2023-24
Course Code & Course Title	:	BECE352E -IoT Domain Analyst	Class Number	:	CH2023240502557, CH2023240502560, CH2023240502562, CH2023240502564, CH2023240502566, CH2023240502568, CH2023240502570, CH2023240502572, CH2023240502574, CH2023240502576, CH2023240502578, CH2023240502581, CH2023240502583, CH2023240502585, CH2023240502587
Faculty	:	Dr. Raju Patel, Dr. Berlin Hency V, Dr. B. Nagajayanthi, Dr. Chandramauleshwar Roy, Dr. S. R. Mahapatro, Dr. Sritama Roy, Dr. Rohith G, Dr.Manimaran.P, Dr. Mangal Das, Dr. Manigandan M, Dr. Upender P, Dr. Pritam Bhattacharjee, Dr. Prasanna Bharathi, Dr. Tanmoy Majumder, Dr. Dhanush R	Slot	:	TA2
Duration	:	90 Minutes	Max. Mark		50

General Instructions: Answer ALL the questions using *appropriate diagram*
- Write your registration number on the question paper in the box provided
- Do not write other information in the question paper.
- Only non-programmable calculator without storage is permitted

Q. No	Sub Sec	Description	Marks
1.		Apply a suitable probabilistic classification algorithm to the given dataset as shown in Table.1 and predict as to whether the given fruit is 'Apple' or 'Red Banana' or 'Others ', when the known features are (Red, Sweet, long). Table 1: (table below)	10
2.		Why is it required to reduce the number of features in machine learning? Apply a suitable dimensionality reduction technique to the following data set and reduce the number of features from 2 to 1. (table below)	15

Table 1:

Fruit	Red	Sweet	Bitter	Long	Short	Total
Apple	350	450	150	0	100	650
Red Banana	400	300	150	350	300	400
Others	50	100	50	50	100	150
Total	800	850	350	400	500	1200

Feature	Sample 1	Sample 2	Sample 3	Sample 4
X	4	8	13	7
Y	11	4	5	14

3.	(i)	With increased usage of smartphones, sensors and heterogeneous devices, IoT applications handle huge volumes of data. Identify the diverse challenges that this enormous network would face in terms of services, security and data computation. Suggest suitable solutions.	5
	(ii)	Suggest a suitable AWS IoT architecture to resolve the above-said challenges. Elaborate on the design considerations involved using appropriate diagrams.	5
4.	(i)	With increasing smart applications, how are the resources effectively allocated to the changing needs of the customer? Illustrate using suitable challenges and solutions.	5
	(ii)	How are resource intensive applications handled to reduce latency overhead? Illustrate using suitable challenges and solutions.	5
5.		How are technologies used to simulate human intelligence and decision making? How would user input and user interaction improve the future of smart devices?	5

**********All the best *************