Roll No. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. (Full Time) - END SEMESTER EXAMINATIONS, NOV / DEC 2024

ELECTRONICS AND COMMUNICATION ENGINEERING
Semester -5
EC5022 & IoT ENABLED SYSTEMS DESIGN
(Regulation2019)

Time: 3hrs Max.Marks: 100

CO1	Articulate the main concepts, key technologies, strength and limitations of IoT.
CO2	Identify the architecture, infrastructure models of IoT.
CO3	Analyze the networking and how the sensors are communicated in IoT .
CO4	Analyze and design different models for IoT implementation.
CO5	Identify and design the new models for market strategic interaction.

BL – Bloom's Taxonomy Levels
(L1-Remembering, L2-Understanding, L3-Applying, L4-Analysing, L5-Evaluating, L6-Creating)

PART- A(10x2 = 20Marks)

(Answer all Questions)

Q.No.	Questions	Marks	CO	BL
1	Write the definition and characteristics of IoT	2	1	1
2	Compare and Contrast Fog and Edge with Cloud Computing	2	1	2
3	Write down the functions of middleware technologies in IoT	2	2	1
4	List down the challenges introduced by 5G on IoT	2	2	2
5	Compare CoAP and HTTP	2	3	2
6	Distinguish between IEEE 802.15.4 g and IEEE 802.15.4e	2	3	2
7	Write down the significance of data aggregation and dissemination.	2	4	1
8	Compare and Contrast Raspberry PI with Arduino	2	4	2
9	Write down the significance of APIs used in IoT application	2	5	1
10	State the purpose of Sensors and Actuators in IoT application	2	5	2

PART- B(5x 13 = 65 Marks)

(Restrict to a maximum of 2 subdivisions)

Q.No.	Questions	Marks	CO	BL
11 (a)	Explain the layer-wise functionality of IoT Architecture along with Protocols used in each of the layers.	13	1	2
	OR			
11 (b)	With necessary diagrams, explain various IoT levels and deployment templates adopted in realizing IoT Applications.	13	1	2
12 (a)	With necessary diagram, explain the working mechanism involved in WSN based SCADA middleware architecture.	13	2	2
	OR			
12 (b)	With necessary diagram, explain the working mechanism involved in RFID based SCADA middleware architecture.	13	2	2
13 (a)	Analyze in detail LoRaWAN technology, detail its Protocol layer functionality, formats and Architecture.	13	3	4

	OR			
13 (b)	Analyze in detail 6LoWPAN technology, detail its Protocol layer functionality, formats and Architecture.	**13**	3	4
14 (a)	Write down the following: (i) Procedures involved in setting up raspberry Pi (5) (ii) RS-232 Serial communication Protocol along with its packet format (5) (iii) I^2C Communication and data transmission format (3)	**13**	4	3
	OR			
14 (b)	Write a python program for the following: (i) Count the number of vowels and consonants in a given string (5) (ii) List the numbers and return the maximum, minimum and average of the numbers (5) (iii) Interface LED with a switch (3)	**13**	4	3
15 (a)	With suitable scenario, explain the usage of IoT technology for smart home application.	**13**	5	4
	OR			
15 (b)	With suitable scenario, explain the usage of IoT technology for smart Health application.	**13**	5	4

ADDITIONAL CONTROLLER OF EXAMINATIONS (UD) * ANNA UNIVERSITY CHENNAI-25

PART- C (1x 15=15Marks)

(Q.No.16 is compulsory)

Q.No.	Questions	Marks	CO	BL
16.	Analyze the Quality of Service performance metrics of an IoT design for Agriculture application formulated with (i) LoRAWAN and (ii) 6LoWPAN. Discuss the advantage and disadvantage experienced by both the technologies when adopted to the considered application.	**15**	5	5