ADDITIONAL CONTROLLER OF EXAMINATIONS
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ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

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

INFORMATION SCIENCE AND TECHNOLOGY
VI Semester
IT5601 - EMBEDDED SYSTEMS AND INTERNET OF THINGS
(Regulation2019)

Time:3hrs Max.Marks: 100

CO1	Understand the internal architecture and programming of an embedded processor.
CO2	Demonstrate the ability to interface I/O devices to the processor.
CO3	Develop embedded and IoT systems using platforms like Arduino and Raspberry Pi.
CO4	Analyze and apply IoT concepts in real-world scenarios.
CO5	Design complete IoT applications using communication models and protocols.

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	Explain the architecture of an 8-bit microcontroller.	2	1	L1
2	Write the key features of the instruction set for an 8-bit microcontroller.	2	1	L2
3	What are the advantages of using RTOS in embedded systems?	2	2	L2
4	List the components of an IoT device.	2	3	L1
5	Describe the role of GPIO pins in Raspberry Pi.	2	3	L2
6	Explain the Arduino programming structure and its key features.	2	4	L2
7	What are the differences between IoT communication protocols like ZigBee and Bluetooth?	2	4	L2
8	Describe the importance of context switching in RTOS.	2	2	L2
9	Explain how sensors are integrated with Arduino for IoT applications.	2	5	L2
10	List and explain two IoT communication models.	2	5	L1

PART- B(5x 13=65Marks)
(Restrict to a maximum of 2 subdivisions)

Q.No.	Questions	Marks	CO	BL
11 (a)	Describe the instruction set of an 8-bit microcontroller and its programming techniques	13	1	L2
	OR			
11 (b)	Explain interrupt handling mechanisms in an 8-bit microcontroller.	13	1	L2
12 (a)	Write an embedded C program to interface an LED and a push button. Explain the logic. OR	13	2	L4
	OR			
12 (b)	Discuss the need for RTOS and priority-based scheduling policies.	13	2	L4
13 (a)	Explain the role of Arduino toolchain in developing IoT applications	13	3	L4
	OR			
13 (b)	Describe the structure of an Arduino sketch and demonstrate its usage with an example.	13	3	L4

14 (a)	Explain the architecture of Raspberry Pi and its interfacing techniques.	**13**	4	L3
	OR			
14 (b)	Describe the working of WiFi and GSM modules in IoT communication.	**13**	4	L3
15 (a)	Design an IoT-based smart healthcare system. Discuss its architecture and key components	**13**	5	L$
	OR			
15 (b)	Explain the process of developing a home automation system using IoT technologies.	**13**	5	L$

PART- C(1x 15=15Marks)

(Q.No.16 is compulsory)

Q.No.	Questions	Marks	CO	BL
16.	Design a complete IoT application for smart agriculture. Discuss its components, communication protocols, and integration with cloud platforms	**15**	5	L6