

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

Fifth Semester

Information Technology

CS3691 - Embedded Systems and IOT

(Common to Sixth Semester Computer Science and Engineering)

Regulations - 2021

Duration : 3 Hrs

Maximum : 100 Marks

PART - A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	Classify the instruction set of 8051 microcontroller.	RE	1	2
2.	List the 8051 interrupts with its priority.	RE	1	2
3.	List the advantages and limitations of priority based process scheduling.	RE	2	2
4.	When RTOS necessary and when it is not necessary in the embedded system?	UN	2	2
5.	Draw the logic structure of IOT and describe its components.	RE	3	2
6.	Define I2C.	RE	3	2
7.	How does GPS function?	RE	4	2
8.	What is Base Station Controller (BSC)?	RE	4	2
9.	Write the types of embedded systems.	RE	5	2
10.	Write the types of general purpose processor.	RE	5	2

PART - B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a i Explain the block diagram and architecture of 8051.	UN	1	7
	ii Illustrate the serial communication in 8051, with its special function register.	UN	1	6
	Or			
	b i Describe the different modes of operation of Timer/Counter in 8051 with its associated registers.	UN	1	7
	ii Explain the timer modes of 8051 microcontroller.	UN	1	6
12.	a i Explain in detail about earliest deadline first scheduling.	UN	2	6
	ii Explain the priority based scheduling policies.	UN	2	7
	Or			
	b i Describe about multitasking and processes in embedded C	UN	2	6
	ii Describe the programming embedded systems in C.	UN	2	7

13.	a	Analyze the basic components of an IoT device with the role of each component, including sensors, actuators, microcontrollers, connectivity modules, and power sources.	AN	3	13
		Or			
	b i	Write an Arduino sketch to control a motor based on sensor input and provide mechanism to vary full speed of motor.	AN	3	6
	ii	Examine the importance of calibration and data validation in sensor readings.	AN	3	7
14.	a	Describe GSM services and its architecture in detail for a suitable embedded application	UN	4	13
		Or			
	b i	How signals are transmitted using GPIO?	UN	4	6
	ii	Write about Raspberry Pi and its function.	UN	4	7
15.	a	Write a program for home automation and explain.	AP	5	13
		Or			
	b	Write a program smart cities and explain.	AP	5	13

*PART – C (Marks 1*15 = 15)*

<i>Q.No</i>		<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
16.	a	Compare and contrast the features and capabilities of Raspberry Pi and Arduino boards for implementing an embedded application.	AN	4	15
		Or			
	b	Analyze the challenges in implementing a smart healthcare setup for rural areas in India.	AN	5	15