Reg. No.												

Question Paper Code	12703

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

Sixth Semester

Electrical and Electronics Engineering

20EEPW601 – EMBEDDED SYSTEMS AND IoT WITH LABORATORY

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Sketch the block diagram of Embedded system.	2	K3	CO1
2.	Indicate the functions of Real time clock.	2	K1	CO1
3.	Mention different models used for the development of an embedded system.	2	K1	CO2
4.	Discuss about Industrial Internet of Things.	2	K1	CO2
5.	Infer the features of CAN and SPI serial interfaces.	2	K2	CO3
6.	Draw and label the I^2C bus frame format.	2	K3	CO3
7.	Define semaphore signaling.	2	K1	CO4
8.	Interpret is cause and effect of dead lock condition in RTOS.	2	K3	CO4
9.	List some evident examples of Real time embedded application.	2	K1	CO5
10.	Sketch the block diagram of Smart meter.	2	K3	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

			Marks	K – Level	CO
11.	a)	i) Interpret the possible steps are involved in build process of embedded control systems.	7	K3	CO1
		ii) Discuss the structural units in embedded processor. How a processor is selected for an embedded application?	6	K3	CO1
		OR			
	b)	Discuss the concept and block diagram of DMA with a neat sketch also explain how the data is transferred between memory and I/O devices using DMA controller.	13	K3	CO1
12.	a)	Discuss the significance of IoT in embedded systems and also discuss functions of sensors and actuators in Embedded system.	13	K2	CO2
		OR			
	b)	Discuss the importance, types of services and models of Cloud computing.	13	K2	CO2

13.	a) i)	Summarize the I/O devices used in Embedded system.	*7*	*K2*	*CO3*
	ii)	Distinguish the features, merits of data transfer using serial and parallel port/devices.	*6*	*K2*	*CO3*
		OR			
	b)	Elaborate the functionalities of RS232 and RS485 standard serial interface with neat diagram also mention the limitations.	*13*	*K2*	*CO3*
14.	a)	Explain the Task, Process and Threads of RTOS with their types and examples.	*13*	*K2*	*CO4*
		OR			
	b)	Explain the interrupt routines are handled by RTOS and illustrate the features of μC/OS RTOS.	*13*	*K2*	*CO4*
15.	a)	Design architectural hardware and software units of Smart meter also mention the challenges and advantages.	*13*	*K4*	*CO5*
		OR			
	b)	Discuss the concept, functions and operation of Smart grid with neat sketch also mention the advantages.	*13*	*K4*	*CO5*

PART - C (1 × 15 = 15 Marks)

16.	a)	Analyze the critical section service by a preemptive and Non-Preemptive scheduler and discuss its action.	*15*	*K2*	*CO4*
		OR			
	b)	What is IPC? Mention the two methods available for it. Explain in detail about message queues.	*15*	*K2*	*CO4*