KUMARAGURU
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B.E/B.TECH DEGREE EXAMINATIONS: APRIL /MAY 2024

(Regulation 2018)

Sixth Semester

ELECTRONICS AND COMMUNICATION ENGINEERING

U18ECE0054: Real Time Embedded Systems

COURSE OUTCOMES

CO1: Compare the hardware and software architectures of Embedded Systems.

CO2: Classify the I/O interface and protocols for an embedded system.

CO3: Interpret the concepts of a real time operating system.

CO4: Apply the concepts of Embedded programming.

CO5: Develop steps to create an embedded system application integrating hardware and software.

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	Define Embedded Systems.	CO1	[K_1]
2.	Differentiate Processor from Coprocessor.	CO1	[K_3]
3.	Specify the role of CRC bits in CAN bus.	CO2	[K_4]
4.	List the uses of interrupt service routine.	CO2	[K_2]
5.	What is the disadvantage of nested loops in embedded programming?	CO3	[K_2]
6.	List the uses of NULL pointers?	CO3	[K_3]
7.	Compare priority inheritance and priority inversion?	CO4	[K_3]
8.	What are all the responsibilities of a kernel?	CO4	[K_2]
9.	Recall the role of cross compiler.	CO5	[K_1]
10.	What are Emulators and Simulators?	CO5	[K_2]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.		Describe the different factors involved in embedded system design process.	16	CO1 [K_4]
12.	a)	Evaluate the intricacies of Serial Bus Protocols, delving into their operational mechanisms, standards and applications.	8	CO2 [K_4]

	b)	Summarize the various Parallel communication bus standards.	8	CO2	[K4]
13.	a)	Explain in detail about Interrupts and Interrupt Service Routines	8	CO3	[K2]
	b)	Discuss about Round Robin architecture and Function Queue Scheduling approaches with advantages and disadvantages in building an embedded system.	8	CO3	[K4]
14.	a)	List the algorithms used in synchronizing the different processes of any real time embedded operating system. Explain any two.	10	CO4	[K4]
	b)	Analyze the Memory Management techniques used in RTOS.	6	CO4	[K3]
15.		With a neat flowchart describe the role of Linkers and Loaders in an embedded system.	16	CO5	[K4]
16.		Analyze a specific case study that illustrate the application and effectiveness of smart cards, focusing on their role, implementation and outcomes?	16	CO5	[K4]

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