KUMARAGURU
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B.E/B.TECH DEGREE EXAMINATIONS: NOV/DEC 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.	List few embedded applications.	CO1	$[K_2]$
2.	Outline the challenges present in the design of embedded systems.	CO1	$[K_2]$
3.	Interpret the characteristics of synchronous communication.	CO2	$[K_2]$
4.	Summarize about HDLC.	CO2	$[K_2]$
5.	Compare Hard Real time and Soft real time systems with an example.	CO3	$[K_2]$
6.	Classify the types of scheduling algorithm.	CO3	$[K_2]$
7.	Define NULL pointer in embedded C.	CO4	$[K_2]$
8.	Develop an embedded C program to read temperature sensor data using Arduino.	CO4	$[K_4]$
9.	Summarize the uses of cross compiler.	CO5	$[K_2]$
10.	Distinguish between Emulator and simulator.	CO5	$[K_2]$

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

11.	Explain typical embedded system architecture with neat diagram.	16	CO1	$[K_3]$

12.	Discuss the Timing and Counting devices in detail.	16	CO2 [K₃]

12. Discuss the Timing and Counting devices in detail. 16 CO2 [K_3]

13. Construct the block diagram of kernel and explain its functions. 16 CO3 [K_3]

14. Build an embedded application for smart home automation using microcontroller. 16 CO4 [K_4]

15. Explain the different ways to getting embedded software file into target system. 16 CO5 [K_3]

16. a) Explain the following terminologies. 16 CO3 [K_3]

   a) Mailboxes
   b) Message queue
   c) Context switching
   d) Priority inversion problem

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