Code: 19A47IT

R-19

IV B.Tech. I Semester Suppplementary Examinations Nov/Dec 2023

Embedded Systems

(Electronics and Communication Engineering)

Max. Marks: 70   Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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		Marks	CO	Blooms Level

UNIT–I

1. a) Develop an assembly language program to send the text string "hello" to serial port 1. Set the baud rate at 9600, 8 bit data, and 1 stop bit. — 7M CO3 L3

   b) Design a 8*8 Keyboard interface with appropriate diagram and develop an assembly language program for the interface — 7M CO4 L3

OR

2. a) Develop an 8051 assembly program to send AITS to LCD display using busy flag — 7M CO3 L3

   b) Explain the 8051 microcontroller interfacing to ADC — 7M CO1 L2

UNIT–II

3. a) Define an Embedded System? Explain the characteristics of Embedded Systems — 7M CO1 L2

   b) Explain in detail about I^2C and SPI communication interface with respect to an embedded system — 7M CO2 L2

OR

4. a) Explain the process for analyzing and evaluating embedded system architecture? — 7M CO2 L2

   b) Compare the operational and non-operational quality attributes of an embedded systems — 7M CO3 L3

UNIT–III

5. a) Distinguish between Software Simulation and hardware debugging along with the uses and limitations of each of it. — 7M CO3 L3

   b) Explain testing and validation for an embedded system — 7M CO2 L2

OR

6. a) Explain different methods by which software is ported to an embedded hardware — 7M CO2 L2

   b) Explain different embedded operating system services available and explain how to perform memory management for a specific operating system — 7M CO2 L2

UNIT–IV

7. a) Compare all the communication interfaces I^{2}C, CAN and USB — 7M CO3 L3

   b) Compare all the wireless communication interfaces with respect to all technical aspects — 7M CO3 L3

OR

8. a) Differentiate all the three communication interfaces RS232, RS422, RS 485 — 7M CO3 L3

   b) Compare of IEEE 802.11 and wireless 1394 — 7M CO3 L3

UNIT–V

9. a) Implement infinite buffer producer/consumer problem using binary semaphore — 7M CO3 L3

   b) Analyze priority inversion and solution to convert unbounded priority inversion to bounded priority inversion in the context of real-time scheduling — 7M CO3 L3

OR

10. a) Analyze the functioning of Interrupt routines in RTOS environment and handling of interrupt source calls — 7M CO3 L3

    b) Analyze various problems present in shared data problem and explain. How to overcome — 7M CO3 L3

END