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18SCS321

Third Semester M.Tech. Degree Examination, Jan./Feb. 2021
Embedded Computing Systems

Time: 3 hrs. Max. Marks: 100

Note: ***Answer FIVE full questions, choosing ONE full question from each module.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

1 a. Define an embedded system and state the components embedded in it. **(05 Marks)**

b. Explain in detail about the hardware units and devices in an embedded system. **(15 Marks)**

OR

2 a. What are the concepts and steps involved in design process of an embedded system? **(10 Marks)**

b. Illustrate the design process involved in Automatic Chocolate Vending Machine (ACVM). **(10 Marks)**

Module-2

3 a. Explain the different Serial Communication methods like RS232C/RS485 communication and UART. **(12 Marks)**

b. Give short account on Watchdog Timer and Real Time Clock. **(08 Marks)**

OR

4 a. Explain Serial Bus Communication Protocols I^2C BUS, CAN BUS and USB. **(12 Marks)**

b. Write short notes on HTTP, TCP/ IP and UDP. **(08 Marks)**

Module-3

5 Explain in detail with examples device interrupts and software interrupts. **(20 Marks)**

OR

6 a. What is Direct Memory Access? Explain in detail with illustration the DAM controller. **(12 Marks)**

b. Write short notes on Device Driver Programming. **(08 Marks)**

Module-4

7 a. Explain in detail Process, Thread and Tasks. **(12 Marks)**

b. Differentiate the characteristics of Functions, Interrupt Service Routines (ISRs) and Tasks. **(08 Marks)**

OR

8 Explain the concept of semaphores and give detailed account on the various usecases of semaphores in embedded systems. **(20 Marks)**

Module-5

9 a. What is RTOS? Explain in detail the services and the embedded system design using RTOS. **(15 Marks)**

b. List the common scheduling models used by schedulers. **(05 Marks)**

OR

10 a. Explain in detail the embedded software development process and tools with necessary illustration. **(12 Marks)**

b. Write notes on Linker and Locator. **(08 Marks)**

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