CBCS SCHEME

USN | | | | | | | | | | 18SCS321

Third Semester M.Tech. Degree Examination, Dec.2019/Jan.2020
Embedded Computing Systems

Time: 3 hrs. Max. Marks: 100

Note: *Answer any 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. Explain components of embedded system hardware with a neat diagram. **(08 Marks)**
b. Write short notes on examples of embedded system. **(04 Marks)**
c. Explain about embedded system design process. **(08 Marks)**

OR

2 a. Explain in brief about microprocessors and micro controllers. **(08 Marks)**
b. Illustrate the design process of an ACVM embedded system. **(08 Marks)**
c. Explain any four challenges in embedded system design. **(04 Marks)**

Module-2

3 a. Describe in detail about UART and HDLC protocol. **(08 Marks)**
b. Write short notes on parallel interfacing with touch screen and LCD controller with diagram. **(08 Marks)**
c. Discuss in brief about synchronous, ISO-synchronous and Asynchronous communications from serial devices. **(04 Marks)**

OR

4 a. Discuss in detail about the any 4 serial bus communication protocols with neat diagram. **(10 Marks)**
b. Write short notes on various wireless and mobile system protocols. **(10 Marks)**

Module-3

5 a. Explain programmed I/O Busy-wait approach without interrupt service mechanism. **(10 Marks)**
b. Demonstrate the steps involved in context switching interrupt latency and dead line. **(10 Marks)**

OR

6 a. Discuss the working of DMA transfer in an embedded system, with a neat diagram. **(10 Marks)**
b. Write short notes on device driver programming and writing physical device-driving ISR's in a system. **(10 Marks)**

Module-4

7 a. Distinguish between function, ISR and tasks. **(10 Marks)**
b. Briefly explain about shared data problem solutions. **(10 Marks)**

OR

8 a. What are counting semaphores how to use P and V semaphore function for bounded buffer problem solution. **(10 Marks)**
b. Define process and task with their states. **(10 Marks)**

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Module-5

9 a. What is the target system with the help of a block diagram, illustrate different components of the system. **(10 Marks)**

b. Mention the various scheduling models and explain the cyclic and Round Robin with Time Slicing scheduling models. **(10 Marks)**

OR

10 a. Explain in detail about Earliest DeadLine First (EDF) and Rate Monotonic Schedulers (RMS). **(10 Marks)**

b. What is RTOS? Explain the design principles when using in RTOS to design an embedded system. **(10 Marks)**

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