



# CBCS SCHEME

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.

### 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)

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-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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