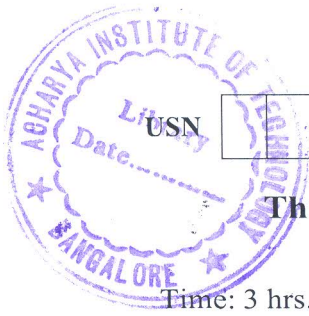


# CBCS SCHEME

18SCS321



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## 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.

### 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<sup>2</sup>C 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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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.