

CBCS SCHEME

USN

§17CS563

Fifth Semester B.E. Degree Examination, Dec.2019/jan.2020 Embedded 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 the embedded system hardware with a neat diagram. (10 Marks)
- b. Explain the process of converting a C program in to ROM image. (06 Marks)
- c. Briefly explain the characteristics of embedded systems. (04 Marks)

OR

- 2 a. Briefly, explain any five design metrics. (05 Marks)
- b. Discuss the challenges faced by designers during embedded system design. (05 Marks)
- c. Give the classification of embedded systems and skills required for designer of an embedded system. (10 Marks)

Module-2

- 3 a. With diagram, explain synchronous serial input and synchronous serial output operations. (08 Marks)
- b. Explain about the sophisticated interfacing features in device ports. (08 Marks)
- c. Write a note on watch dog timer. (04 Marks)

OR

- a. Explain I²C and CAN bus protocols. (08 Marks)
- b. Write a note on PCI bus. (04 Marks)
- c. Explain Bluetooth and ZigBee wireless protocols. (08 Marks)

Module-3

- 5 a. Explain different hardware and software sources of interrupts. (10 Marks)
- b. Explain various mechanisms of interrupt vector with suitable examples. (10 Marks)

OR

- 6 a. Explain context switching, interrupt latency and interrupt service deadline. (10 Marks)
- b. With neat diagram, explain DMA transfer in an embedded system. (10 Marks)

Module-4

- 7 a. Define process and task, with diagram, explain task states. (10 Marks)
- b. Distinguish between function, ISR and task. (10 Marks)

OR

- 8 a. What is Semaphore? Explain use of semaphore as resource key and for critical section. (10 Marks)
- b. Describe shared data problem. Give its solution. (10 Marks)

Module-5

- 9 a. Explain the RTOS design goals. (10 Marks)
- b. Discuss the three approaches used for interrupt routines in RTOS while handling interrupt calls. (10 Marks)

OR

- 10 a. Explain Round Robin scheduling and preemptive sche (10 Marks)
- b. Explain various software tools used in implementati (10 Marks)