

B.E. Eighth Semester (Electronics & Telecommu. Engineering) (CGS)
10645 : Professional Elective-II : Embedded and Real Time Systems : 8 XT 04

P. Pages : 2

Time : Three Hours



AU - 3002

Max. Marks : 80

- Notes :
1. Due credit will be given to neatness and adequate dimensions.
 2. Assume suitable data wherever necessary.
 3. Illustrate your answer necessary with the help of neat sketches.

SECTION - A

1. a) Explain the various characteristics of an Embedded system. 7
b) Explain the components of a typical embedded system. 6

OR

2. a) Explain the different classifications of an Embedded system. Give an example for each. 7
b) What is an emulator? What are various components of an emulator? 6
3. a) Illustrate an semaphore in RTOS. Discuss the types of semaphores with examples. 7
b) List out task states in RTOS. When does a task move from running state to block state? 6

OR

4. a) Differentiate between semaphore & mutex. Can counting semaphore be implemented using binary semaphore? 7
b) Explain first cum first serve scheduling in RTOS. 6
5. a) What are the message queues? How are they different from the events? 6
b) Explain following distinctive characteristics of RTOS. 8
 - i) Timers
 - ii) Task Priorities
 - iii) Interrupt latency
 - iv) Memory Management.

OR

6. a) What are watchdog timers? How do they help in designing real - time tasks? 7
b) What is meant by memory locking? In which type of environment is it used? 7

SECTION - B

7. a) Draw and explain block diagram of PIC micro controller. Discuss the need of watchdog Timer. 8
- b) Differentiate between RISC Vs CISC. 6

OR

8. a) What is THUMB? How does the Thumb instructions set differ from ARM instruction set? Are the THUMB instructions executed directly? 8
- b) Draw and explain status register of PIC microcontroller. 6
9. Explain Cyclic and Round Robin with Time Slicing Scheduling model in details. 13

OR

10. a) Explain development process of an Embedded system. 7
- b) Enlist an application of various software modules and tools for an implementation of Embedded system. 6
11. Write short note on : 13
- i) I²C BUS
- ii) CAN BUS

OR

12. Describe IEEE 11491 (JTAG) testability boundary scan architecture in detail. 13
