[5871]-716

B.E. (Computer Engineering)
EMBEDDED AND REAL TIME OPERATING SYSTEM
(2015 Pattern) (Elective - III) (Semester - II)

Time : 2½ Hours]   **[Max. Marks : 70**

Instructions to the candidates :
1) *Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Figures to the right indicate full marks.*
4) *Assume suitable data, if necessary.*

Q1) a) What is embedded system? List and explain different challenges of embedded system. **[5]**

b) What are the different types of processor technologies used in embedded system design? **[5]**

OR

Q2) a) List and Explain software tools used for designing of an embedded system. **[5]**

b) Describe different forms of memories in the embedded system. **[5]**

Q3) a) Enlist various Internet enabled system protocols and explain one with its features. **[5]**

b) Explain least slack time first scheduling and latest release time scheduling in real time systems. **[5]**

OR

Q4) a) Explain Serial protocol RS-232C in detail with neat diagram. **[5]**

b) Enlist various Internet enabled embedded system protocols and explain any one with its features and diagram. **[5]**

Q5) a) What is priority inversion problem in real time systems? How this problem can be solved? **[5]**

b) Explain why PCI/X buses are used for high speed data transfer. **[5]**

c) How to represent Precedence constraints and data dependency among real-time tasks? Explain with diagram. **[6]**

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Q6) a) Explain message queues with suitable diagram. **[5]**

b) Explain Serial protocols RS-232C & RS-485. **[5]**

c) Explain in detail Parallel ports I/O Interfacing with neat diagram. **[6]**

Q7) a) What are various Real-time requirements in the domain of Signal processing or Multimedia. **[6]**

b) What are the different types of semaphores and where they are used?

[5]

c) Write Shote notes on RT Linux, Vx Works? **[5]**

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Q8) a) What is Semaphore? How does it help in resource sharing in RTOS Kernel? **[6]**

b) Explain semaphores message queues, mailboxes? **[5]**

c) How interrupts are handled in RTOS environment? **[5]**

Q9) a) Explain with example Validation and debugging in an embedded system.

[6]

b) Draw and explain model of real-time communication with related terminologies. **[6]**

c) List capabilities of commercial real-time operating systems. Enlist the features of RTLinux. **[6]**

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Q10) a) What are issues in resource reservation. **[6]**

b) Explain Resource reservation protocol with diagram. **[6]**

c) Describe the embedded software development process. **[6]**

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