

Total No. of Questions : 12]

SEAT No. :

P1480

[Total No. of Pages : 3

[4164] - 733 ✓

May - June 2012

B.E. (Information Technology)

REAL TIME SYSTEM

(2008 Pattern) (Elective - III) (Sem. - II)

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:-

- 1) *Answers to the two sections should be written in separate sheet.*
- 2) *Use of logarithmic tables, slide rules and electronic pocket calculator is allowed.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicates full marks.*
- 5) *Assume suitable data, if necessary.*

SECTION - I

Q1) a) Give definition of Real time system. Classify following systems as hard or soft with brief justification. **[8]**

- i) Electronic pacemaker.
- ii) Digital watch
- iii) Electronic breaking system in automobile.

b) List any four important issues in the design of Real time System with their significance with respect to RTS. **[8]**

OR

Q2) a) Explain following terms in brief: **[8]**

- i) Periodic and aperiodic tasks.
- ii) Time constraints in hard and soft RTS.

b) What are the requirements of real time databases and how they are handled in real time system design? **[8]**

Q3) a) What is runtime anomaly? State the conditions to cause such anomaly. **[8]**

b) What happens when the actual computation time of a task exceeds its worst case computation time? Suggest a mechanism to overcome this problem. **[8]**

OR

P.T.O

- Q4)** a) List assumption for uni-processor scheduling algorithms. What are necessary and specific conditions for RM schedule-ability. [8]
- b) Run a RM schedule-ability check for the set of following tasks and show the schedulable tasks. [8]

Ti	Ei	Pi
1	20	100
2	30	150
3	80	210
4	100	400

- Q5)** a) State the requirements of real time system programming language. [8]
- b) Explain in brief Real time vs. General purpose data bases. [10]

OR

- Q6)** a) What are real time system language features that support task concurrency and security? [8]
- b) What is serialization consistency? What are the parameters required for maintaining transaction order? [10]

SECTION - II

- Q7)** a) Discuss the limitations of real time LAN protocols with respect to guaranteed transmission, priority inversion avoidance, and low run time overhead. [10]
- b) Describe Real time LAN protocol strategies for providing service guarantee. [8]

OR

- Q8)** a) Discuss anyone controlled access protocol for Real time LAN protocol. [8]
- b) Best effort protocols offer better performance than guarantee based protocols justify. [10]

- Q9)** a) List the minimum set of operations that a real time OS kernel needs to support. [8]
- b) Compare and contrast static and dynamic priorities [8]

OR

- Q10)** a) Differentiate between Real Time Multi-user and Multi-Tasking Operating systems. [8]
b) Write features of commercial RTOS. [8]

- Q11)** a) Discuss the causes of failures and describe the type of faults in Real Time Systems. [8]
b) Describe any one fault detection measures in Real Time System. [8]

OR

- Q12)** a) How redundancy is used in Real Time system for fault tolerance. [8]
b) Explain following terms with respect to failures in Real Time Systems. [8]
i) Hardware and software fault.
ii) Error recovery
iii) Fault latency
iv) Error latency

