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B.E / B.Tech ( Full Time ) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY  
2013

**COMPUTER SCIENCE AND ENGINEERING**

**SEVENTH SEMESTER  
CS 9077- REAL TIME SYSTEMS  
(REGULATIONS 2008)**

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

**PART-A (10 x 2 = 20 Marks)**

1. List the properties of good performance measure.
2. Consider the following set of task arrivals to a system. Schedule them using First-Fit decreasing algorithm.

Task	$e_i$	$P_i$
$T_1$	5	10
$T_2$	7	21
$T_3$	3	22
$T_4$	10	30

3. Compare and contrast blocks and procedures in real time programming languages.
4. What are the experimental real time languages?
5. Why is the Earliest Deadline First algorithm not always optimal for disk-access scheduling?
6. What are the two approaches for concurrency control?
7. Give the different ways of sending messages in real time communication.
8. What are the actions that are indicative of a faulty processor?
9. Define hazard rate.
10. Why is clock synchronization vital to real time systems?

**Part – B ( 5 x 16 = 80 marks)**

11. a) Discuss the hierarchical view of performance with example (6)  
b) Explain the scheduling of the critical task using primary and alternative tasks with example. (10)
12. a) i) Illustrate with a fragment of Ada code to demonstrate the benefits of the packages. (8)  
ii) Specify the timing specifications for good real-time language (8)

**OR**

- b) Discuss the desired language characteristics for real-time programming languages (16)
13. a) i) Justify the need for response time predictability in real-time systems. (8)  
ii) Explain briefly about the transaction priorities. (8)

**OR**

- b) Describe the ways of maintaining serialization consistency in real-time databases. (16)
14. a) Explain the token-based protocols suitable for communication in real-time systems. (16)

**OR**

- b) i) Describe about the hardware redundancy. (16)
15. a) Explain the ways to obtain parameter values for software reliability models. (16)

**OR**

- b) Describe the two models for NMR clusters in detail. (16)