

15103

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M. Tech. I - Sem. (Main) Exam., Dec. - 2018
Computer Science & Engineering
1MCS3.2 Critical System Design

Time: 3 Hours

Maximum Marks: 100
Min. Passing Marks: 33

Instructions to Candidates:

Attempt any five questions, Marks of questions are indicated against each question. Draw neat and comprehensive sketches wherever necessary to clearly illustrate your answer. Assume missing data suitable if any and specify the same. Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL

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- Q.1 (a) Release time, Deadline and Timing constraints are an important factor in a real-time system. Explain the value of these three factors in a real-time system. [12]
- (b) Elaborate the relation between period execution time and faces of a periodic task in a real-time system. [8]
- Q.2 (a) Define partial order relation (precedence relation) in respect to the critical real-time system. [10]
- (b) Explain a work-conserving scheduling approach for a critical real-time system. [10]
- Q.3 What do you mean by weighted Round Robin approach for scheduling time shared applications? State and prove that the Round Robin algorithm used in high speed switched networks. [20]

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Q.4 (a) Justify that, in a critical real-time system, the online scheduling algorithm is used without knowledge about the jobs that will be released in the future. [10]

(b) Elaborate job slices characteristics of cyclic scheduling algorithm. [10]

Q.5 (a) Explain necessary and sufficient schedule ability test for fixed critical priority system. [8]

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(b) Describe how to determine by simulation the schedulability of each task in a system of independent periodic, which may be non preemptable and may suspend itself? [12]

Q.6 Explain Notation and Assumptions regarding clock driven scheduling. [20]

Q.7 (a) In respect to, time relativity of the jobs explain temporal distance constraints. [10]

(b) In tabular format, explain the difference between Clock driven, Weighted Round Robin and Priority-driven approach for a critical system design. [10]