8E8165

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B. Tech. VIII Sem. (Main / Back) Exam., April – May 2018
Computer Science & Engineering
8CS4.2A Real Time Systems

Time: 3 Hours **Maximum Marks: 80**
Min. Passing Marks: 26

Instructions to Candidates:

*Attempt any **five questions,** selecting **one question** from **each unit.** All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

1. NIL 2. NIL

UNIT-I

Q.1 (a) Define Real Time System? Discuss typical real time applications. [8]

(b) Explain the following: [2×4=8]

(i) Release time

(ii) Period

(iii) Execution time

(iv) Deadline

OR

Q.1 (a) Draw and explain block diagram of RTS. [8]

(b) What are timing constraints? Explain various timing constraints in detail [8]

UNIT-II

Q.2 (a) Explain the reference model of RTS. Differentiate between processors and resources. [8]

(b) Explain and compare Periodic and Aperiodic task models. [8]

OR

Q.2 (a) What is real time scheduling? What are the classifications of real time scheduling? Explain. [8]

(b) Explain and compare the following: [4×2=8]

(i) Dynamic versus static system

(ii) Offline versus online scheduling system

UNIT-III

Q.3 (a) Explain clock driven scheduling with example. Discuss the advantages and disadvantages of clock driven scheduling. [8]

(b) Explain the following: [4×2=8]

(i) General structure of cyclic scheduling

(ii) Cyclic executives

OR

Q.3 (a) Explain the notations and various assumptions for periodic driven scheduling. Also explain various fixed priority scheduling algorithm. [8]

(b) What is meant be schedulability test? Explain the Inexact and exact schedulability tests for RM and DM. [8]

UNIT-IV

Q.4 (a) What is aperiodic task scheduling? Explain assumption and approaches for aperiodic task scheduling. [8]

(b) Explain and compare server based and non-server based fixed priority scheduling algorithms. [8]

OR

Q.4 (a) Explain the scheduling of flexible computation in detail. [8]

(b) Explain the following: [4×2=8]

(i) Imprecise computation model

(ii) Firm deadline model

UNIT-V

Q.5 Explain the following: [4×4=16]

(a) Resource contention

(b) Resource Access Control

(c) Priority inversion problem

(d) Concurrent access of data objects

OR

Q.5 (a) Explain basic priority-Inheritance and priority-Ceiling protocols. [8]

(b) Explain stack based priority ceiling protocol for multiple unit resources. [8]
