

(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 0149**

Roll No.

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### B.Tech.

(SEM VIII) EVEN SEMESTER THEORY EXAMINATION,  
2009-2010

### REAL TIME SYSTEM

Time : 3 Hours

Total Marks : 100

**Note :** (i) Attempt *ALL* questions.

(ii) All questions *carry equal marks*.

1. Attempt *any four* parts of the following : (4x5=20)

- (a) Every system is 'Real Time System' - elaborate it with suitable examples.
- (b) Define Hard Real Time Systems with suitable examples.
- (c) Distinguish aperiodic task with sporadic task giving examples.
- (d) Explain the difficulty in writing formal specification of a Real Time System.
- (e) Discuss the factors that are to be analyzed for estimating execution time for RTS.
- (f) State and explain issues involved in Real Time Computing.

2. Attempt *any two* parts of the following : (2x10=20)

- (a) Discuss different approaches used in Real Time Scheduling and their important characteristics.
- (b) Write a note on Offline and Online scheduling also discuss relative merit and demerit of the two.
- (c) Discuss relative merits and demerits of Least-Slack-Time-First Algorithm and also its nonoptimality.

3. Attempt *any two* parts of the following : (2x10=20)

- (a) Discuss Priority-Ceiling Protocol and explain how it avoids Deadlocks ?
- (b) Define Dynamic Priority Systems with suitable examples and discuss the implementation of Priority Ceiling Protocol in such systems.
- (c) Discuss basic features and governing rules of Preemption-Ceiling Protocol and mention its relative merits over Priority-Ceiling Protocol.

4. Attempt *any two* parts of the following : (2x10=20)

- (a) Define Fixed Priority End to End Periodic Tasks and further discuss the Schedulability criterion of Nongreedy Synchronized tasks.

(b) Discuss the following with respect to Multiprocessor :

- (i) Identical versus Heterogeneous Processors and
  - (ii) Local versus Remote Resources
- (c) Discuss Temporal Distance Model and hence, explain Distance Constraints Monotonic Algorithm.

5. Attempt *any two* parts of the following : (2x10=20)

- (a) Draw schematic diagram of real time communication model and further give architectural overview of it.
- (b) Discuss timed token protocol hence; explain TTRT and further mention provisions if token is lost.
- (c) Threads and the Kernel are two on which any Operating System functions, hence give an overview of Real time OS.

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