

(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) THEORY EXAMINATION 2010-11

REAL TIME SYSTEMS

Time : 3 Hours

Total Marks : 100

- Note :** (i) Attempt **ALL** questions.
(ii) Make suitable assumption wherever necessary.

1. Attempt any **four** parts of the following : **(5×4=20)**
- What does the term “real” in a real-time system signify?
Explain what you mean by a real time system.
 - Give an example of a soft real-time and a non-real-time task. Explain the key difference between the characteristics of these two types of tasks.
 - What are the different types of timing constraints that can occur in a system ? Give examples of each.
 - What do you understand by jitter associated with a periodic task ? How are these jitters ? How can they be overcome ?
 - Explain how predictability is important in a real-time system.
Why it can be used in a real-time system ?
 - What is the difference between the preemptive jobs and non-preemptive jobs and explain with an example.

2. Attempt any **four** parts of the following : (5×4=20)

- (a) What are the difference between fixed priority and dynamic priority scheduling approach ? Explain which one is more suitable for periodic tasks ?
- (b) Discuss the general structure of cyclic scheduler.
- (c) What is the purpose of synchronization in real-time operating system ?
- (d) Explain the structure of clock-driven scheduler in real-time task.
- (e) Compare and contrast off-line scheduling with on-line scheduling.
- (f) Explain why EDF is called an optimal scheduling policy. Give an example.

3. Attempt any **two** parts of the following : (10×2=20)

- (a) Write short notes on the following :
 - (i) Critical sections
 - (ii) Resource conflict and blocking.
- (b) Give the definition of basic priority ceiling protocol. Also discuss the different properties of it.
- (c) Compare priority inheritance protocol with priority ceiling protocol. Discuss the pros and cons of each protocol.

4. Attempt any **two** parts of the following : (10×2=20)

- (a) What is the simple bin-packing problem ? Explain various algorithms used for bin-packing compare their relative performance.
- (b) Discuss the multiprocessor system model. What are the advantages of multiprocessors system over distributed system ?
- (c) Discuss the relative performances of End to End and MPCP approaches of task scheduling.

5. Attempt any **two** parts of the following : (10×2=20)

- (a) Differentiate between Real time operating system and general purpose operating system. Explain the working of any real time operating system.
- (b) Explain the VTCSMA algorithm for real time communication with taking a suitable example.
- (c) Write short notes on the following :
 - (i) Medium access control protocols for broadcast networks.
 - (ii) Internet and resource reservation protocols.