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

PAPER ID : 0149 Roll No. | | | | | | | | | | |

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)**

(a) What does the term "real" in a real-time system signify ? Explain what you mean by a real time system.

(b) 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.

(c) What are the different types of timing constraints that can occur in a system ? Give examples of each.

(d) What do you understand by jitter associated with a peridoic task ? How are these jitters ? How can they be overcome ?

(e) Explain how predictability is important in a real-time system. Why it can be used in a real-time system ?

(f) What is the difference between the preempsitive jobs and non-preempitive 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 sytem 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.