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

PAPER ID : 2164 Roll No. | | | | | | | | | | |

B. Tech.

(SEM. V) ODD SEMESTER THEORY EXAMINATION 2010-11

OPERATING SYSTEM

Time : 3 Hours *Total Marks : 100*

Note :—Attempt all questions.

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

   (a) What is an Operating System ? Discuss the main Services of the operating system.

   (b) Discuss the differences between a time sharing system and real time system.

   (c) Discuss the objectives of the Multiprocessor systems.

   (d) What do you mean by Kernel ? Explain monolithic kernel and microkernel.

   (e) Describe the steps involved in Booting.

   (f) Explain the following :—

      (i) Multitasking

      (ii) Multithreading.

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

   (a) Write an algorithm to explain the producer/consumer using semaphores.

(b) (i) Compare and contrast the use of monitors and semaphores operations.

(ii) What is Critical Section ? Discuss.

(c) Discuss one classical problem related to the process synchronisation.

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

(a) (i) Explain the need for Process Control Block (PCB).

(ii) Discuss the performance criteria for CPU scheduling.

(b) (i) Describe the necessary condition for deadlock to occur.

(ii) In the respect of Banker's Algorithm discuss whether system is safe or unsafe. If a system is safe, show how it is possible for all users to complete :

	Current loan	Maximum need
user (1)	2	6
user (2)	4	7
user (3)	5	6
user (4)	0	2
Available	1	

(c) Explain the following scheduling algorithm :—

(i) Multilevel feedback queues scheduling

(ii) First In First Out (FIFO) scheduling.

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

(a) What do you understand by fragmentation ? What are the different techniques to remove fragmentation in case of multiprogramming with fixed partitions and variable partitions ? Discuss.

(b) Define virtual memory concepts and also discuss page replacement algorithms in brief.

(c) Write short notes on :—

(i) Thrashing

(ii) Cache memory organisation.

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

(a) What are the different file organizations ? Discuss access mechanisms.

(b) Explain the following :—

(i) Directory System

(ii) File Protection

(c) Discuss the disk scheduling algorithms.