[07 – 3115]

III/IV B.Tech. DEGREE EXAMINATION.

First Semester

Computer Science Engineering

Elective I – OPERATING SYSTEMS

(Common with IT)

(Effective from the admitted batch of 2004–2005)

Time : Three hours Maximum : 70 marks

Question No. 1 is compulsory.

Answer any FOUR questions from the remaining.

All questions carry equal marks.

Answer ALL parts of any questions at One place.

1. (a) What do you meant by time sharing systems?

   (b) Differentiate User thread and Kernel thread.

   (c) What is Dispatcher and dispatcher latency?

   (d) Define busy Waiting and spin lock.

   (e) Define dynamic linking and dynamic loading.

   (f) What are the most common schemes for defining the logical structure of a directory?

   (g) What is the role of DMA in I/O systems?

2. What is the need for system calls? Briefly explain the types of system calls provided by an operating system.

3. (a) What is meant by inter process communication? Explain the two fundamental models of inter process communication.

   (b) Define process. Describe the contents of a Process Control Block (PCB).

4. (a) What is a race condition? Explain how a critical section avoids this condition. What are the properties which a data item should processes to implement a critical section?

   (b) Describe a solution to the Dining philosopher problem so that no races arise.

5. Consider the following page references string

   1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6. How many page fault would occur for the following page replacements algorithms, assuming an allocation of 4 frames? Remember that frames are initially empty.

   (a) LRU

   (b) FIFO

   (c) Optimal.

6. (a) Discuss the different techniques with which a file can be shared among different users.

(b) What are the file allocation methods and explain it?

7. (a) What is meant by RAID and explain different RAID levels?

(b) Consider the situation in which the disk read/write head is currently located at track 45 (of tracks 0-255) and moving in the Positive direction. Assume that the following track requests have been made in this order: 40, 67, 11, 240 and 87. What is the order in which optimized C-SCAN would service these requests and What is the total seek distance?

8. (a) Define deadlock Explain the necessary conditions for deadlock to occur.

(b) What are semaphores? How do they implement mutual exclusion?