Exam. Code : 107205
Subject Code : 2060

BCA 5th Semester

OPERATING SYSTEM

Paper–III

Time Allowed—3 Hours] [Maximum Marks—75

Note :— (i) The candidates are required to attempt any **FIVE** questions. All questions carry equal marks.

(ii) The student can use only Non-programmable and Non-storage type calculator.

1. (a) Explain the need and various services provided by an operating system.

   (b) Explain various advantages and disadvantages of an operating system. 10+5

2. (a) What is a process control block ? What is the function of process control block ? Also explain the various states of a process.

   (b) How is critical region and the principle of mutual exclusion related to each other ? 10+5

3. (a) What is deadlock ? Explain how deadlock can be avoided and prevented ?

   (b) Explain the concept of system call. 10+5

4. (a) What is meant by CPU scheduling ? Explain different scheduling algorithms with examples.
   (b) What are different file allocation methods ? Explain each method with its merits and demerits. 10+5

5. Disk requests come to the disk driver for cylinders 15, 25, 10, 6, 45, 15, 37 in that order. One seek takes 10 msec per cylinder moved. How much seek time is needed for ?
   (i) First Come First Serve
   (ii) Closest cylinder next
   (iii) Elevator algorithm. (Moving upward)
   Note : In all the cases the arm is initially at cylinder 25. 15

6. (a) What are security requirements of an operating system ?
   (b) Explain difference between internal and external fragmentation. 10+5

7. (a) What is the cause of thrashing ? How does it occur and explain different methods to prevent from thrashing ?
   (b) Write short notes on the following :
      (i) Process state diagram
      (ii) Real time system. 10+5

8. What are various page replacement algorithms ? For the memory with 3 page frames and the following reference strings 4 3 4 1 2 5 3 2 1, find out the number of page faults for the following page replacement algorithm :
   (i) FIFO (ii) Optimal (iii) LRU. 15