Exam.Code:0459
Sub. Code: 3609

2012
M.Sc. Information Technology
First Semester
MS-42: Operating System Concepts

Time allowed: 3 Hours Max. Marks: 80

***NOTE**: Attempt five questions in all, including Question No. 9 (Unit-V) which is compulsory and selecting one question each from Unit I – IV.*

x-x-x

Unit-I

1. Explain the following operating systems in detail along with advantages and disadvantages of each: 16
   (a) Real Time System
   (b) Simple Batch Processing
   (c) Multiprogramming System
   (d) Distributed System
2. (a) Define process. Discuss various process states with the help of process state diagram. Also discuss purpose of various scheduling queues in this diagram. 10
   (b) Differentiate between shared memory systems and message passing systems IPC models. 6

Unit -II

3. Discuss the followings: 16
   (a) Race condition.
   (b) Lock and Unlock primitives.
   (c) Peterson's solution of critical section problem.
   (d) Semaphores.
4. (a) Discuss in detail how deadlock prevention is done. 8
   (b) Discuss Resource Allocation graph algorithm to avoid deadlocks. 8

Unit -III

5. Discuss paging memory allocation technique in detail. Also discuss various techniques of structuring page table. 16
6. (a) Discuss the concept of demand paging in detail. 8
   (b) Discuss and differentiate between associate memory and set associative memory types. 8

P.T.O.

Unit -IV

7 Discuss the followings: 16

(a) File attributes.

(b) File Operations.

(c) File Types.

(d) File Structure.

8 (a) Suppose that the head of moving head disk with 200 tracks numbered 0 to 199 is currently serving the request at track 143 and has just finished a request at track 125. If the queue request is kept in FIFO order, 86, 147, 91, 177, 94, 150, 102, 175, 130. What is the total head movement to satisfy these requests for (i) FCFS (ii) SSTF disk scheduling algorithm? 8

(b) Name the different file allocation methods. Explain the linked allocation of file implementation with merits and demerits. 8

Unit-V

9 **Discuss the following briefly:**

(a) Long term scheduler

(b) Functions of OS

(c) Monitors

(d) Wait-for-graphs in deadlocks

(e) Fragmentation

(f) Working set

(g) RAID

(h) File system mounting

2 X 8 =16