(i) Printed Pages: 3 Roll No. .....

(ii) Questions : 9 Sub. Code : 3609

Exam. Code : 0459

M.Sc. Information Technology 1st Semester

1128

OPERATING SYSTEM CONCEPTS

Paper : MS-42

Time Allowed : Three Hours] **[Maximum Marks : 80**

Note :— Attempt **five** questions in all, selecting **one** question from each Unit and the compulsory question.

UNIT—I

1. Explain the following operating systems in detail along with advantages and disadvantages of each :
   (a) Multitasking
   (b) Parallel Systems
   (c) Batch Processing
   (d) Real Time Systems. 4+4+4+4=16
2. (a) What do you understand by process ? Discuss life cycle of a process in detail. 6
   (b) Define process scheduling. Discuss any three non-preemptive scheduling algorithms in detail. 10

UNIT—II

3. (a) What is difference between deadlock prevention and deadlock avoidance ? Discuss in detail how deadlock prevention is done. 12

   (b) Write a note on wait-for-graph with example. 4

4. Write short notes on the following :

   (a) Reader Writer Problems

   (b) Producer Consumer Problem

   (c) Dining Philosopher Problem. 5+5+6=16

UNIT—III

5. (a) Consider the reference stream 1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6. Making a table calculate how many page faults will occur while using FIFO and LRU page replacement techniques using 3 frames. 8

   (b) Discuss paging memory management technique in detail. 8

6. (a) What do you understand by hierarchy of memory types ? Also discuss the concept and working of cache memory in detail. 8

   (b) Write short notes on working set, thrashing and fragmentation. 8

UNIT—IV

7. (a) Discuss File System mounting process in detail. 8

   (b) Discuss tree structured and acyclic graph directory structure in detail. 8

8. (a) Discuss and differentiate between linked and indexed file allocation methods. 8

(b) Discuss and differentiate between disk management and swap space management. 8

UNIT—V

(Compulsory Question)

9. Discuss the following in short :

(a) Inter process communication

(b) Schedulers

(c) Critical section

(d) Deadlock detection

(e) Lazy swapper

(f) Associative memory

(g) File operations

(h) External fragmentation during file allocation. 8×2=16