

(i) Printed Pages : 3

Roll No. ....

(ii) Questions : 9

Sub. Code : 

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Exam. Code : 

4	5	9
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M.Sc. IT 1<sup>st</sup> Semester

1125

**INFORMATION TECHNOLOGY**

**Paper-MS-42 : Operating System Concept**

**Time Allowed : Three Hours]**

**[Maximum Marks : 80**

**Note :-** Attempt **one** question from each Unit I, II, III and IV and compulsory question in Unit-V. All questions carry equal marks.

**UNIT-I**

1. (a) Which are the important functions of an Operating System ? Also draw difference between single user and multi-user operating system. 4+4
- (b) How does an Operating System manage a process ? Also explain various operations which can be performed with a process. 4+4
  
2. (a) Explain Parallel, Distributed and Real Time Systems along with examples. 8
- (b) Define Process ? How Inter-Process Communication takes place ? Explain in detail. 2+6

## UNIT-II

3. (a) What are Concurrent Processes ? How critical section problem is solved in this case ? Explain. 2+6
- (b) How "Resource Allocation Graph" is helpful in deadlocks ? Also explain the algorithm. 2+6
4. (a) How "Producer Consumer Problem" and "Dining Philosopher Problem" is handled through synchronisation ? Explain. 4+4
- (b) Write any algorithm to detect and recover from deadlocks. 8

## UNIT-III

5. (a) Draw difference between Cache and Associative memories. 4+4
- (b) Explain one technique each for continuous and non-continuous memory allocation. 4+4
6. (a) Explain any two Page-Replacement Techniques. 4+4
- (b) Explain any two memories in detail in a memory-hierarchy. 4+4

## UNIT-IV

7. (a) How 'file-sharing and its protection' is handled in File System Mounting ? Explain in detail. 4+4
- (b) Why disk scheduling is important ? Explain the "SCAN" and "LOOK" for the same. 4+4

8. (a) Draw difference between Sequential and Direct Access for Storage Management. 4+4  
(b) What is the structure of a File-System ? How is it implemented ? Explain. 4+4

**UNIT-V**  
**(Compulsory)**

9. Explain :

- (a) RAID
- (b) Access Control
- (c) Acyclic Graph
- (d) Thrashing
- (e) No Preemption
- (f) Semaphores
- (g) Multi-tasking
- (h) Multi-programming.

2×8=16