

(i) Printed Pages : 2

Roll No. ....

(ii) Questions : 9

Sub. Code : 

2	6	0	3	7
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Exam. Code : 

0	4	5	9
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M.Sc. Information Technology 1<sup>st</sup> Semester  
(2125)

**OPERATING SYSTEM CONCEPTS**

Paper : MS-42

Time Allowed : Three Hours]

[Maximum Marks : 80

Note :— Attempt **ONE** question from each unit and compulsory Question No. 9. All questions carry equal marks.

**UNIT-I**

1. (a) Why is OS important? Explain Single, Multi, and Batch-Processing systems in detail. 8
- (b) How are schedulers implemented for process scheduling? Explain. 8
2. (a) Compare Parallel, Distributed, and Real-Time systems. 8
- (b) Draw the difference between pre-emptive and non-pre-emptive scheduling. 8

**UNIT-II**

3. (a) Define synchronization. Explain the Producer-Consumer Problem in detail. 8
- (b) What is deadlock? How do you detect, prevent, and avoid it? Explain. 8

4. (a) Explain various software solutions for process synchronization. 8  
(b) Explain and exemplify the Banker's algorithm in detail. 8

### UNIT-III

5. (a) What is associative memory? Explain direct mapped and set-associative in detail. 8  
(b) How do you allocate memory? Explain various techniques. 8
6. (a) Explain memory hierarchy in detail. 8  
(b) Explain any two page replacement algorithms. 8

### UNIT-IV

7. (a) What is a file? Explain various access methods in detail. 8  
(b) Explain any two allocation methods for files. 8
8. (a) Write a detailed note on storage management. 8  
(b) Perform disk scheduling through FCFS, SSTF, and SCAN. 8

### (Compulsory)

9. Explain:
- (a) Disk Management
  - (b) RAID
  - (c) Virtual Memory
  - (d) Memory Protection
  - (e) Process Control Block
  - (f) Structure of OS
  - (g) Race Condition
  - (h) Resource Allocation Graph. 8×2=16