

(i) Printed Pages : 4]

Roll No.

(ii) Questions : 9]

Sub. Code :

3	6	0	9
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Exam. Code :

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M.Sc. 1st Semester Examination

1127

INFORMATION TECHNOLOGY (Operating System Concepts)

Paper : MS-42

Time : 3 Hours]

[Max. Marks : 80

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

Unit-I

1. (a) Explain the various functions of an operating system.
- (b) Describe the differences between symmetric and asymmetric multiprocessing. Explain the advantages and limitations of multiprocessing systems.

8,8

NA-384

(1)

Turn Over

2. (a) Describe the differences among short-term, medium term and long-term scheduling.

(b) Explain the following scheduling algorithms :

(i) Shortest-job first

(ii) Round Robin Scheduling

Consider the following set of processes to explain the above algorithms :

Process	Burst Time	
P ₁	6	
P ₂	8	
P ₃	7	
P ₄	3	8,8

Unit-II

3. (a) What is a critical section problem ? Explain Petersons's solution.

(b) Explain the Dining-Philosopher's problem of synchronization and how to avoid a deadlock situation in this problem.

8,8

4. (a) What are the necessary conditions for a deadlock to occur ?
(b) How are deadlocks described graphically ?
(c) How can the occurrence of a deadlock be prevented ? 4,4,8

Unit-III

5. (a) Explain the concept of Paging.
(b) Explain the different techniques for structuring a page table. 8,8
6. (a) Explain FIFO and Optimal Page Replacement algorithm with example.
(b) Explain the working of cache memory using set-associative mapping. 8,8

Unit-IV

7. Explain the following schemes for defining directory structure :
- (a) Single level directory structure
(b) Two level directory structure
(c) Tree structured
(d) Acyclic graph 16

8. (a) Explain the contiguous allocation method of allocating disk space. What are its advantages and limitations ?
- (b) Explain the concept of swap space management. 8,8

Unit-V

(Compulsory Question)

9. (a) Define a process and list various process states.
- (b) What is a context switch ?
- (c) What is a semaphore ?
- (d) Differentiate between CPU Burst and I/O Burst.
- (e) Distinguish between preemptive and non-preemptive scheduling.
- (f) List the names of file attributes.
- (g) Differentiate between Address Space and Physical Space.
- (h) What is Fragmentation ? 8×2=16