

OPERATING SYSTEMS

Time : 3 hours

Max Marks : 60

Answer all **five** units. (5 x 12 = 60 Marks)**UNIT-I**

1. (a) Explain operating system services.
- (b) What are special purpose systems? Classify their types.

OR

2. (a) Discuss various computing environments.
- (b) In what ways is the modular kernel approach similar to the layered approach? In what way does it differ from the layered approach?

UNIT-II

3. (a) Define a process. With a neat diagram explain its states.
- (b) Given the data

Process	Arrival Time (ms)	CPU Time (ms)
P1	0	3
P2	0	7
P3	2	6
P4	5	4
P5	3	5

Draw Gantt chart for SJF algorithm. Calculate average waiting time, Average turnaround time.

OR

4. (a) Explain (i) Processor Affinity (ii) load balancing with respect to multiprocessor scheduling.
- (b) Explain different multithreading models.

UNIT-III

5. (a) What is a semaphore? With a code segment give the functioning of wait() and signal().
- (b) Describe the necessary and sufficient conditions for a deadlock to occur with an example.

OR

6. (a) With a neat diagram explain segmentation. Show an example diagrammatically.

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(b) Consider the following snapshot of a system

Processes	Allocation			Maximum			Available		
	A	B	C	A	B	C	A	B	C
P0	0	1	0	7	5	3	3	3	2
P1	2	0	0	3	2	2			
P2	3	0	2	9	0	2			
P3	2	1	1	2	2	2			
P4	0	0	2	4	3	3			

Answer following questions using Bankers algorithm.

a) Is the system in a safe state?

Can request for (0,2,0) by P0 be granted immediately? Give reason.

UNIT-IV

7. (a) A small computer has 4 page frames. A process makes the following list of page references:

1, 2, 3, 4, 0, 3, 2, 1, 5, 2, 3, 1, 2, 5, 0

How many page faults occur, using LRU and Optimal page replacement algorithms?

(b) List and explain different file attributes and file operations.

OR

8. (a) With a neat figure explain the steps in handling page fault.

(b) What is a mount point? Illustrate the process of file system mounting

UNIT-V

9. (a) Suppose that a disk drive has 5000 cylinders, numbered 0 to 4999. The drive is currently serving a request at cylinder 143, and the previous request was at cylinder 125. The queue of pending requests, in FIFO order, is 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130

Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests, for each of the following disk-scheduling algorithms?

(i). FCFS (ii). SSTF (iii). C-SCAN

(b) What is an access matrix? Explain different methods of implementing it.

OR

10. (a) Discuss in brief disk management.

(b) Explain revocation of access rights.