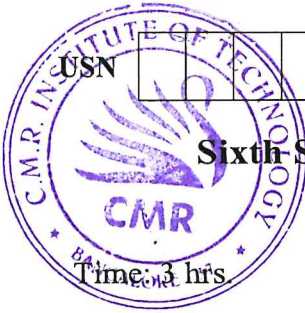


CBCS SCHEME

17CS64



Sixth Semester B.E. Degree Examination, July/August 2022 Operating System

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define Operating System. With a neat diagram, explain its two views. (07 Marks)
- b. Explain the multiprogrammed systems and time-sharing systems. (07 Marks)
- c. Explain multiprocessor systems and its classification. (06 Marks)

OR

- 2 a. Explain the storage hierarchy with a neat diagram. (07 Marks)
- b. Explain concept of virtual machines. (07 Marks)
- c. Define process. Explain the process states with a neat diagram. (06 Marks)

Module-2

- 3 a. Explain single and multithreaded process. List the benefits of multithreaded programming. (07 Marks)
- b. Define user threads and kernel threads. (03 Marks)
- c. Explain multilevel queue scheduling and multilevel feedback queue scheduling with neat diagrams. (10 Marks)

OR

- 4 a. Explain critical-section problem and list its three requirements. (06 Marks)
- b. Describe a synchronization tool for the solution of critical-section problem. (07 Marks)
- c. Explain Dining-Philosophers problem. (07 Marks)

Module-3

- 5 a. Define dead lock. Discuss dead lock prevention. (08 Marks)
- b. Consider the following snapshot of a system:

	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P ₀	0	1	0	7	5	3	3	3	2
P ₁	2	0	0	3	2	2			
P ₂	3	0	2	9	0	2			
P ₃	2	1	1	2	2	2			
P ₄	0	0	2	4	3	3			

- (i) Find the need matrix.
- (ii) Check whether the sequence $\langle P_1, P_3, P_4, P_2, P_0 \rangle$ satisfies the safety criteria.
- (iii) Suppose, process P₁ makes a request, Request₁ = (1, 0, 2) that is one additional instance of resource type A and two instances of resource type C, check whether this request can be immediately granted.
- (iv) Whether the Request₁ = (1, 0, 2) leaves the system in safe state, also find the sequence $\langle P_1, P_3, P_4, P_0, P_2 \rangle$ is safe
- (v) A new request, Request₂ = (3, 3, 0) can be granted. Justify your answer. (12 Marks)

OR

- 6 a. What is paging? Explain paging hardware with TLB. (10 Marks)
b. Explain the concept of shared pages. (06 Marks)
c. Explain segmentation with a neat diagram. (04 Marks)

Module-4

- 7 a. Consider the following page reference stream: 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1. Calculate the number of page faults for FIFO, optimal and LRU algorithms for 3 frames. Which algorithm is the most efficient? (12 Marks)
b. What is demand paging? With a neat diagram explain the steps in handling page fault. (08 Marks)

OR

- 8 a. Explain the directory structure for file system. (10 Marks)
b. Explain different allocation methods for a file on a disk with neat diagrams. (08 Marks)
c. Explain backup and restore. (02 Marks)

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BANGALORE - 560 037**Module-5**

- 9 a. Explain: (i) FCFS (ii) SSTF (iii) SCAN (iv) C-SCAN (v) LOOK disk scheduling algorithms with examples. (12 Marks)
b. Explain revocation of access rights to objects shared by different users. (08 Marks)

OR

- 10 a. With a neat diagram, explain the components of a Linux system. (08 Marks)
b. Explain the process management in Linux platform. (08 Marks)
c. Explain passing of data among processes in Linux. (04 Marks)

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