

SASTRA DEEMED UNIVERSITY

(A University under section 3 of the UGC Act, 1956)

End Semester Examinations

July 2022

Course Code: CSE308

Course: OPERATING SYSTEMS

Question Paper No. :U1078

Duration: 3 hours

Max. Marks:100

PART - A

Answer any FOUR questions

4 x 20 = 80 Marks

1. Describe in details about different categories of System Calls and explain each category with examples.
2. (a) How page fault will be handled by virtual memory describe in details with block diagram? (10)
(b) Consider page reference string 1, 3, 0, 3, 5, 6 and 3 with 3-page frames. Find number of page faults using FIFO. (10)
3. (a) Write a program for single producer and single consumer with bounded array. (10)
(b) Explain in details about reader and writer problem with example. (10)
4. (a) A system with five processes P0 through P4 and three resources of type A, B, C. Resource type A has 10 instances, B has 5 instances and type C has 7 instances. Suppose at time t0 following snapshot of the system has been taken. (10)

Process	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	

Is the system in a safe state? If yes, then what is the safe sequence? Apply the banker's algorithm.

- (b) List the all four conditions must hold for a deadlock to occur and explain the resource-allocation graph. (10)
5. Compare and explain the File allocation algorithms of contiguous and linked allocation.
6. Explain in details about the application of I/O Interface.

PART - B

Answer the following

1 x 20 = 20 Marks

7. (a) Calculate the completion time, waiting time and turnaround time for given problem using non-preemptive shortest job first CPU scheduling algorithm. (10)

Process ID	Burst Time	Arrival Time
P ₀	8	5
P ₁	5	0
P ₂	9	4
P ₃	2	1

- (b) Calculate the total seek time of FCFS and SSTF disk scheduling for the order of request is (82,170,43,140,24,16,190) and current position of Read/Write head is: 50. (10)
