

Process	Arrival Time	Burst time	Priority
P1	0	10	2
P2	1	6	3
P3	2	12	1
P4	3	15	4

13. a) What is message passing? Discuss procedure consumer problem with message passing. 13 K2 CO3

OR

b) Demonstrate the classical problems of synchronization. 13 K3 CO3

14. a) Consider the reference string 6, 1, 1, 2, 0, 3, 4, 6, 0, 2, 1, 2, 1, 2, 0, 3, 2, 1, 2, 0 for a memory with three frames and calculate number of page faults by using FIFO, LRU and Optimal Page replacement algorithms. Also calculate the hit ratio and miss ratio. 13 K3 CO4

OR

b) Explain with the help of examples FIFO and LRU, optical page replacement algorithms with example reference string. Mention the merits and demerits of each of the above. 13 K2 CO4

15. a) Suppose the order of request is- 82,170,43,140,24,16,190. Total 200 Tracks and current position of Read/Write head is: 50 moving in left direction. Find the number of head movements in cylinders using FCFS, SCAN, SSTF and LOOK. 13 K3 CO5

OR

b) Illustrate various file allocation methods with their relative advantages and disadvantages. 13 K2 CO5

PART - C (1 × 15 = 15 Marks)

16. a) Consider the following system structures in the Banker's algorithm with resources A, B, C and process P0 to P4: 15 K3 CO3

	Max			Allocation			Available			Need		
	A	B	C	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						

Using Banker's algorithm, answer the following questions:

- (ii) What are the contents of the need matrix?
- (iii) Is the system in a safe state? Why?
- (iv) If a request from process P4 arrives for additional resources of (1, 2, 0) can the banker's algorithm grant their request immediately? Show the new system state.

OR

b) i) Demonstrate the methods for handling deadlock. 9 K3 CO3
 ii) Classify deadlock and starvation. 6 K3 CO3