

QP Code : 5567

(3 Hours)

[ Total Marks : 80

- N. B. : (1) Question No. 1 is compulsory.  
 (2) Attempt any three out of the remaining five questions.

1. Attempt any four questions :-

- (a) Differentiate between Monolithic and Microkernel. 5  
 (b) Explain effect of page size on performance. 3  
 (c) Draw and explain five state process models. 5  
 (d) Explain disk cache. 5  
 (e) Explain "chmod" command in UNIX. 5  
 (f) What do you mean by 'Busy Waiting'? What is wrong with it? 5
2. (a) Explain in detail file management in UNIX. 10  
 (b) Explain dining philosopher problem and solution to it. 10
3. (a) What is deadlock? Explain necessary and sufficient conditions to occur deadlock. What is the difference between Deadlock avoidance and prevention? 10  
 (b) Consider the following set of processes with CPU burst time 10

Process	Burst Time	Arrival Time
P1	10	1
P2	04	2
P3	05	3
P4	03	4

- (i) Draw Gantt chart for FCFS, SJF preemptive and Round Robin (Quantum = 03). Calculate average waiting time and average turnaround time.  
 (ii) Explain which scheduling policy is adopted by Linux.
4. (a) What is Operating System? Explain different functions and objectives of operating system. 10  
 (b) What is mutual exclusion? Give software approaches for mutual exclusion. 10

[ TURN OVER

5. (a) Consider following Snapshot at time  $T_0$ : 5 processes  $P_0$  through  $P_4$ . 3 resource types A (10 units), B (5 units), and C (7 units). 10

	ALLOCATION			MAX			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			

- (i) Compute "Still Need" matrix?  
(ii) Is system currently in safe or unsafe state? Why?
- (b) Explain various I/O buffering techniques. 10
6. (a) What is system calls of operating system? Explain any five system calls. 10  
(b) Explain techniques of disk scheduling. 10