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.   5
    (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 meant 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   10
     deadlock. What is the difference between Deadlock avoidance and
     prevention?
   (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 Gnatt 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   10
     of operating system.
   (b) What is mutual exclusion? Give software approaches for mutual   10
     exclusion.

[TURN OVER

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

	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

_____