Q.P. Code : 3317

(3 Hours)   [Total Marks : 80

N.B. (1)   Question No.1 is **compulsory**.

     (2)   Attempt any three questions out of the remaining questions.

     (3)   Assume suitable **data** wherever **necessary** and mention it **clearly**.

1. (a)   Solve any five (each question carries 2 marks) :   10
   - (i)   Differentiate between monolithic and microkernel.
   - (ii)   Explain effect of page size on performance.
   - (iii)   Draw and explain five state process model.
   - (iv)   What is paging ?
   - (v)   What is thrashing ?
   - (vi)   Explain data structures used in Banker algorithm

   (b)   Explain Linux OS with respect to Kernel, memory management and scheduling.   10

2. (a)   Explain different file access methods   10
   (b)   Explain critical section problem with its different solutions.   10

3. (a)   What is deadlock ? Explain necessary and sufficient condition for deadlock to occur. Explain deadlock avoidance, prevention and detection.   10
   (b)   The requested tracks in the order received are - 54, 57, 40, 20, 80, 120, 150, 45, 180. Apply the following disk scheduling algorithm starting track at 90.   10
   (1) FCFS   (ii) SSTF   (iii) C-SCAN

4. (a)   What is operating system. Explain different functions and objectives of operating system.   10
   (b)   Consider the following snapshot of a system.   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			

Answer the following questions using Bankers algorithm.

(a) What is the content of the matrix need ?

(b) Is the system in safe state ?

(c) If the request from P1 arrives for (1, 0, 2) can the request be granted immediately.

5. (a) What is paging ? Explain LRU, FIFO, OPT page replacement policy for **10** the given page frame sequences. Page frame size is 4.

2, 3, 4, 2, 1, 3, 7, 5, 4, 3, 2, 3, 1

Calculate page hit and page miss.

(b) What is mutual exclusion ? Give software approaches for mutual exclusion. **10**

6. (a) What are system calls ? Explain any five system calls. **10**

(b) Explain how readers / writers problem can be solved using semaphores. **10**

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