Q. P. Code: 38498

Duration: 3hours **Marks: 80**

NB: (1) Question no. 1 is compulsory.
(2) Attempt any three out of remaining five questions.
(3) Assume data if required

Q-1 Attempt **any FOUR**

a Explain the difference between monolithic kernel and micro kernel. 5
b What is mutual exclusion? Explain its significance. 5
c Discuss various scheduling criteria. 5
d Explain various file allocation techniques 5
e Explain the disk cache. 5

2-a What is operating system? Explain various functions and objectives. 10
b What is deadlock? Explain the necessary and sufficient condition for deadlock. What is the difference between deadlock avoidance and prevention? 10

3-a Explain the following in brief: 10
(a) Process synchronization (b)Inter-Process Communication
b Consider the following set of processes, assuming all are arriving at time 0. 10

process	Burst time	Priority
P1	2	2
P2	1	1
P3	8	4
P4	4	5
P5	5	3

Calculate average waiting time and turn-around time for FCFS, SJF (Non-Pre-emptive), Priority and RR (Quantum=2).

4-a What is paging? Explain LRU, FIFO and Optimal page replacement policy for the following string. Page frame size is 4. 10
1,2,3,4,5,3,4,1,6,7,8,7,8,9,7,8,9,5,4,5,4,2
b Explain banker's algorithms in detail. 10

5-a What is system call? Explain any five system call in details. 10
b Explain paging hardware with TLB along with protection bits in page table. 10

Q-6 Write short notes on: **(any two):** 20
(a) Linux Virtual file system
(b) Process control block
(c) Readers and writer problem using Semaphore
(d) Explain disk scheduling algorithms.

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