

Con. 6478-13.

LJ-10642

(3 Hours)

[Total Marks : 100

- N.B. :** (1) Question No. 1 is **compulsory**.
(2) Attempt any **four** questions out of **remaining**.
(3) Assume **suitable** data if **necessary**.

1. (a) Explain the functions of Operating system. **10**
(b) Explain the system calls. What are the five major categories of system calls? **10**
2. (a) Consider the following set of processes, with length of CPU bursts given in milliseconds as follows :— **10**

Process	Burst time	Arrival Time	Priority
P ₁	8	0	3
P ₂	1	1	1
P ₃	3	2	2
P ₄	2	3	3
P ₅	6	4	4

- (1) Draw Gantt Charts for FCFS, SJF, preemptive priority and RR(Quantum = 2)
(2) What is turnaround time of each process for above algorithms?
(3) What is the waiting time of each process for each of the above algorithms?
(4) Which algorithm results in minimum average waiting time?
- (b) Explain various page replacement policies with example. **10**
3. (a) Explain Multi-level paging. **10**
(b) Explain the solution to dining philosopher problem using semaphores. **10**
4. (a) Explain RAID with different levels. **10**
(b) Explain the different file organization techniques. **10**
5. (a) Explain how logical address is converted into physical address in Paging. **10**
A 16-bit computer is implementing the paging scheme. The page size is of 4096 bytes. The page table for process A is as follows :—

Page No.	Frame No.
0	7
1	2
2	5
3	1
4	12
5	6
6	0

Convert the following logical addresses into corresponding physical addresses :

- (i) 22340 (ii) 3720
- (b) Explain process management in Linux. **10**
6. (a) Explain the necessary and sufficient conditions for deadlock to occur. Explain the different techniques for deadlock prevention. **10**
(b) What is mutual exclusion? What are the different ways to enforce mutual exclusion? **10**
7. Write short notes on (any **four**) :— **20**
- (a) SCAN and SEEK disk scheduling algorithms.
(b) Distributed OS.
(c) Architecture of windows OS.
(d) Inodes.
(e) Monolithic Vs. Mikrokernel.