Con. 6478-13. **LJ-10642**

<div align="center">(3 Hours)</div> **[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 **10** as follows :—

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 :

   <div align="center">(i) 22340   (ii) 3720</div>

   (b) Explain process management in Linux. **10**

6. (a) Explain the necessary and sufficient conditions for deadlock to occur. Explain the different **10** techniques for deadlock prevention.

   (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.

<div align="center">————V—————</div>