

- N. B. :** (1) Question No. 1 is **compulsory**.
 (2) Answer any **four** out of remaining.
 (3) Assume **suitable** data whenever **necessary** and **justify** it.

1. (a) Write down the essential differences between the following types of OS. 5
 (i) Batch System
 (ii) Real Time System
 (iii) Time Sharing System
 (b) Consider the following snap-shot of jobs to be executed using Round Robin algorithm with a time slice = 1ms. Find average turn around and Average waiting time. 5

Job	Arrival Time (MS)	Next CPU Brust time (MS)
J1	0	4
J2	2	5
J3	5	6
J4	6	2

- (c) Explain necessary conditions for deadlock to occur. 5
 (d) Explain the following page replacement Algorithms. 5
 (i) FIFO
 (ii) Least Recently Used (LRU)
2. (a) Explain in detail State - Transition diagram for UNIX SVR 4 system. 10
 (b) Explain NTFS in detail. 10
3. (a) Explain RAID with different levels. 10
 (b) What is Virtual Memory ? Explain with neat sketch the translation of virtual address into physical address in a segmentation / paging system. 10
4. (a) Explain how Banker's Algorithm satisfies all three conditions of critical section solution. 10
 (b) Explain file management methods in Windows -- 2000. 10
5. (a) What is Mutual Exclusion ? What are the requirements for mutual exclusion ? 10
 (b) Explain how a "Bounded - buffer Producer - Consumer" problem can be solved by using semaphores. 10
6. (a) Explain various IO buffering techniques ? 10
 (b) Explain different process scheduling Method. 10
7. Write short note on any **two** :— 20
 (a) Operating system Design issues
 (b) Uniprocessor Scheduling
 (c) Threads
 (d) Process Control Block.