

# The University of Burdwan

M.Sc. Semester II Examination, 2020 (CBCS)

**Subject: Computer Science and Applications**

**Paper: MCSA-202**

(Advanced Operating Systems)

**Time: 2 Hours**

**Full Marks: 40**

Attempt any *eight* questions.  
All questions carry equal marks.

1. Explain the concept of race condition in the context of process synchronization. 5
2. Differentiate between Binary and Counting Semaphore in the context of Bounded waiting and progress properties. 5
3. Using Shortest Remaining Time First CPU Scheduling algorithm, calculate the average waiting time of the given instance. 5

Process	Burst Time	Arrival Time
P1	5	0
P2	4	1
P3	2	2
P4	1	3

4. Why wait-for graph is used in Deadlock? Explain with examples. 5
5. Using Optimal Page Replacement algorithm, find the page fault rate of the given reference with 4 frames. 1, 2, 3, 1, 1, 2, 5, 6, 6, 5, 2, 1, 8, 5, 2, 1, 1, 4, 2, 3. 5
6. Calculate average head movement of the given reference with total 250 cylinders, and the starting head position is 50 using C-SCAN disk scheduling algorithm. 45, 130, 54, 12, 190, 60, 40, 100, 220, 230, 5. 5
7. Explain first fit and best fit memory allocation techniques in brief. 5
8. Discuss demand page memory management in brief. 5
9. Discuss the differences between user level and kernel level thread synchronizations. 5
10. Discuss 'chmod' command of Linux with suitable examples. 5