K26P 0072

Reg. No. : .....

Name : .....

I Semester M.C.A. Degree (C.B.S.S. – Reg./Supple./Imp.) Examination, November 2025
(2022 Admission Onwards)
MCA1C02 : SYSTEM SOFTWARE AND OPERATING SYSTEMS

Time : 3 Hours Max. Marks : 60

SECTION – A

Answer **all** questions. **Each** question carries **two** marks. **(10×2=20)**

1. What is the function of the Bootstrap Loader ?
2. How do assemblers handle forward references ?
3. Define preemptive and non-preemptive CPU scheduling.
4. What is the purpose of inter-process communication ?
5. What is the main difference between deadlock prevention and deadlock avoidance ?
6. Explain the concept of a logical address space and a physical address space.
7. What is thrashing ?
8. Briefly explain the goal of FCFS disk scheduling.
9. Differentiate between user-level threads and kernel-level threads.
10. What is rotational latency in disk access ?

SECTION – B

Answer **all** questions. **Each** question carries **eight** marks. **(5×8=40)**

11. a) Explain the different phases of a compiler with a neat diagram.

OR

b) Explain basic components of assembly language.

P.T.O.

12. a) Define a process. Explain the different process states with a neat transition diagram.

OR

b) Explain how monitors can be used as a tool for process synchronization.

13. a) Explain the concept of segmentation in memory management. How is a logical address translated into a physical address ?

OR

b) Describe different page replacement algorithms with an example for each.

14. a) Explain the round robin scheduling algorithm. Calculate the average waiting time for three processes, P1 (burst = 5), P2 (burst = 4), and P3 (burst = 2), with a quantum of 2.

OR

b) Explain the concepts of deadlock detection and deadlock recovery.

15. a) Explain the different levels of the RAID structure and their respective benefits.

OR

b) Define the following in the context of memory management :

i) Paging

ii) Segmentation.
