

**Roll No.**

**Total No. of Pages : 02**

**Total No. of Questions : 09**

**B.Tech. (AI&ML/AI and Data Science/AI/CE/CSE/Cyber Security/ Data Science/ Internet of Things and Cyber Security including Block Chain Technology) SBS - B.Tech. (CSE) (Sem.-4)**

## OPERATING SYSTEM

**Subject Code : BTCS-402-18**

**M.Code : 77628**

**Date of Examination : 19-06-23**

**Time : 3 Hrs.**

**Max. Marks : 60**

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

## SECTION-A

**1. Write briefly :**

- a. Define kernel.
- b. What is purpose of fork() and exec() system call?
- c. Define long term scheduler.
- d. What is the difference between turnaround time and response time?
- e. Why do we need multithreading?
- f. When the race condition occurs?
- g. Define RAG.
- h. Why do we need device drivers?
- i. What is the impact of page size on overall system performance?
- j. State Belady's anomaly.

## SECTION-B

2. Difference between multiprogramming, multitasking and multiprocessing OS.
3. Discuss the Dining Philosopher problem in process synchronization.
4. Discuss the necessary and sufficient condition for a deadlock to occur in system.
5. Compare and contrast the different disk space or file allocation methods.
6. What is virtual memory? Discuss the benefits of virtual memory techniques.

## SECTION-C

7. What is IPC? Discuss the producer consumer problem using Semaphores.
8. What is page replacement? Discuss different page replacement algorithms and by using a reference string 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1. Assume there are three frames. Apply LRU and find out how many page faults occurs.
9. Write a Short note on :
  - a. Demand Paging
  - b. SCAN vs. C-SCAN disk scheduling algorithm

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**