

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (CSE/ AI&ML/DS/Internet of Things and Cyber Security including  
Blockchain Technology) (Sem.-4)

**OPERATING SYSTEM**

Subject Code : BTCS-402-18

M.Code : 77628

Date of Examination : 14-05-2024

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. Why System calls are used?
- b. Difference between multitasking and multiprogramming OS.
- c. Define Context Switching.
- d. What is turnaround time?
- e. What are four necessary, conditions for deadlock to occur?
- f. What is thrashing?
- g. When page fault occurs?
- h. Define Semaphores.
- i. Difference between linked allocation and indexed allocation.
- j. What is bad block?

**SECTION-B**

2. Explain the concept of process. Draw a process transition diagram and explain the various process states.

3. What is a critical section problem? What are the requirements to solve critical section problem?
4. What is disk scheduling? Explain the following types of disk scheduling by giving an example
  - a. SSTF Scheduling
  - b. C-SCAN Scheduling.
5. Define Deadlock. Explain the banker's algorithm with the help of a suitable example.
6. What is free space management? Discuss the bit vector method along with advantages and disadvantages.

### SECTION-C

7. Define CPU Scheduling. Consider the following set of process with the length of CPU burst time in milliseconds :

Process	Burst Time	Priority
P1	7	3
P2	9	2
P3	2	1
P4	1	4
P5	3	5

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5 and all at time 0.

- a. Draw Gantt chart, illustrating the execution of these processes using FCFS, SJF, pre-emptive priority and RR (quantum = 1) scheduling.
- b. What is turnaround time of each process for each of the scheduling algorithm mentioned above?
- c. What is the waiting time for each process for each of the scheduling algorithms?
8. Explain different memory management techniques in detail with the help of examples.
9. **Write a short note on :**
  - a. Resource Allocation Graph
  - b. Real Time Operating System.

**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.**