

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Civil Engineering / Electrical Engineering / Electronics & Communication Engineering) (Sem.-6)

OPERATING SYSTEMS

Subject Code : BTCS-402-18

M.Code : 79262

Date of Examination : 14-06-2025

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) Differentiate between long term scheduler from short term scheduler.
- b) Distinguish between a process and a program.
- c) What is the difference between a page table and a page frame?
- d) What are Semaphores? Why are they used?
- e) What is the need of page replacement?
- f) Explain the concept of locality of reference.
- g) What is boot block? Explain with a diagram.
- h) What is File concept?
- i) What are indexed files? How is indexing implemented?
- j) Explain the difference between time-sharing and multi-programming.

SECTION - B

2. What are the various views of the operating system? Explain.
3. What is a PCB? What is stored in it? What is its role in the CPU scheduling? Explain.
4. In a variable partition scheme, the operating system has to keep track of allocated and free space. Suggest a means for achieving this. Describe the effects of new allocations and termination in your suggested scheme.
5. Explain the File Protection and Security methods.
6. Explain the concept of direct memory access in detail.

SECTION - C

7. Suppose that a disk drive has 5000 cylinders, numbered 0 to 4999. The drive currently Services a request at cylinder 143 and the previous request was at cylinder 125. The queue of pending request in FIFO order is:

86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130.

Starting from the current position, what is the total distance (in cylinders) that the disk arm moves to satisfy all pending requests, for each of the following algorithms a)FCFS b) SSFT c) SCAN d) LOOK e) C-SCAN.

8. Consider the following page-reference string: 1, 2, 3, 2, 5, 6, 3, 4, 6, 3, 7, 3, 1, 5, 3, 6, 3, 4, 2, 4, 3, 4, 5, 1.

Indicate the page faults and calculate total number of page faults and successful ratio of FIFO, optimal and LRU algorithms. Assume that there are four frames and initially all the frames are empty.

9. **Explain the following:**

- a) Internal and external fragmentation.
- b) Mapping between logical and physical address space.
- c) Difference between paging and segmentation.

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.