Only for 2021 to 2023 AD admitted Students

Hall

TRIBHUVAN UNIVERSITY
FACULTY OF MANAGEMENT
Office of the Dean
December 2025

Full Marks: 60
Pass Marks: 30
Time: 3 Hrs.

BIM / Fourth Semester / IT 241: Operating System

Candidates are required to answer the questions in their own words as far as practicable.

Group "A"

Brief Answer Questions: ***[10 × 1 = 10]***

1. When does operating system switch from user mode to kernel mode?
2. Define busy wait.
3. Define locality of reference.
4. List any two benefits of ostrich algorithm.
5. Differentiate between absolute path and relative path of a file.
6. In which of the four I/O software layers Computing the track, sector, and head for a disk read is done?
7. What do you mean by authorization mechanism?
8. What is a mobile operating system?
9. Define inter process communication.
10. Where does virtual memory reside?

Group "B"

Short Answer Questions: (Attempt any FIVE Questions) ***[5×3 = 15]***

11. What are the conditions for mutual exclusion property? List them.
12. Can you approach for dynamic quantum value in round robin algorithm? Give reasons.
13. Does it mandatory for page and frame size to be equal? Justify.
14. Compare contiguous file allocation method with linked file allocation method.
15. What are device controllers? Explain its functionality in brief.
16. How is a remote file accessed in distributed system? Explain.

Group "C"

Long Answer Questions: (Attempt any THREE Questions) ***[3 ×5 = 15]***

17. In a paging system page replacement is used with four-page frames and eight pages, how many page faults will occur for FIFO and LRU with the reference string 0, 1, 7, 2, 3, 2, 7, 1, 0, 3 if the four frames are initially empty?
18. Explain the communication structures of distributed operating system in detail.

19. Disk requests come in to the disk driver for cylinders 10, 22, 20, 2, 40, 6, and 38, in that order. A seek takes 6 msec per cylinder moved. How much seek time is needed for

    (a) First-Come, first served.
    (b) Shortest seek time next.

    Assume that the initial head position is at 30.

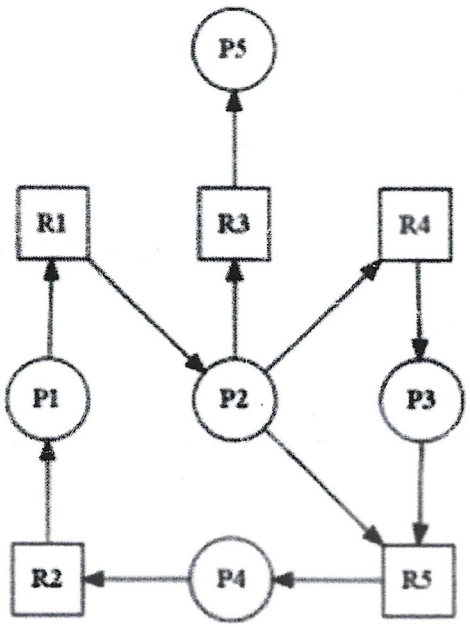
20. How is system call processed? Explain in detail with suitable illustration.

Group "D"

Comprehensive Answer / Case / Situation Analysis Questions: ***[2 × 10 = 20]***

21. Explain about strict alternation approach to achieve mutual exclusion, with limitations.

22. Describe the necessary conditions for Deadlock. In the given figure determine whether there is deadlock or not and explain the process to recover it if there is any.



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