



B.TECH DEGREE EXAMINATIONS: NOV /DEC 2024

(Regulation 2018)

Fourth Semester

INFORMATION TECHNOLOGY

U18ITT4001: Operating System

COURSE OUTCOMES

- CO1: Experiment with various CPU scheduling algorithms with the understanding of operating system concepts
- CO2: Apply the methods for process coordination
- CO3: Apply the various memory management strategies
- CO4: Illustrate the various file management strategies
- CO5: Apply the disk scheduling policies

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

(Answer not more than 40 words)

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|--|-----|-------------------|
| 1. What is layered approach? | CO1 | [K ₂] |
| 2. Differentiate Dual mode and Multimode operations. | CO1 | [K ₂] |
| 3. What are semaphores? | CO2 | [K ₂] |
| 4. List any two steps to handle the deadlocks. | CO2 | [K ₂] |
| 5. What is swapping? | CO3 | [K ₂] |
| 6. What is paging mechanism? | CO3 | [K ₂] |
| 7. List out the four main objectives of the virtual file systems. | CO4 | [K ₂] |
| 8. Discuss three advantages of dynamic (shared) linkage of libraries compared with static linkage. Describe two cases in which static linkage is preferable. | CO4 | [K ₂] |
| 9. Write a short note about free space management. | CO5 | [K ₂] |
| 10. List out the functionalities of swap space management. | CO5 | [K ₂] |

Answer any FIVE Questions:-

PART B (5 x 16 = 80 Marks)

(Answer not more than 400 words)

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|--|---|-----|-------------------|
| 11. a) What are the five major activities of an operating system with regard to process management? Explain the steps in detail. | 8 | CO1 | [K ₂] |
| b) Explain the process execution and process structure of the Peterson's solution. | 8 | CO1 | [K ₂] |

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|-----|----|---|----|-----|-------------------|
| 12. | a) | Explain why Windows, Linux, and Solaris implement multiple locking mechanisms. Describe the circumstances under which they use the mutex locks. | 8 | CO2 | [K ₃] |
| | b) | With an example, explain the concept of readers-writers problem with the concurrent levels. | 8 | CO2 | [K ₂] |
| 13. | | Explain the following in detail:
a. Standard swapping
b. Hierarchical paging | 16 | CO3 | [K ₂] |
| 14. | | What is contiguous memory allocation? With a neat diagram explain about the memory protection and memory allocation. | 16 | CO4 | [K ₂] |
| 15. | | Explain the following disk scheduling with an example.
a. FCFS scheduling
b. SSTF scheduling | 16 | CO5 | [K ₂] |
| 16. | | Consider the following snapshot of a system: | 16 | CO2 | [K ₃] |

Answer the following questions using the banker's algorithm:

- a. What is the content of the matrix Need?
- b. Is the system in a safe state?
- c. If a request from process P1 arrives for (0,4,2,0), can the request be granted immediately?
