

B.E. (Electronics and Communication Engineering)
Seventh Semester
EC-711: Operating Systems

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

- I. Attempt the following:-
- Differentiate between physical memory and virtual memory.
 - List any two scheduling algorithms that can result in starvation.
 - What are the advantages of bit map or bit vector based approach to free-space management?
 - What is the role of resource-allocation graph in context to deadlocks?
 - What do you understand by Sector slipping? What is the use of this technique?

(5x2)

UNIT - I

- II. a) Explain the memory layout for a multiprogramming system. In a multiprogramming and time-sharing environment, several users share the system simultaneously. This situation can result in various security problems. Discuss two such problems. Can we ensure the same degree of security in a time-shared machine as in a dedicated machine? Explain your answer.
- b) Write a note on Critical-Section Problem and its solution.
- III. a) What are the five major categories of system calls? Briefly discuss the characteristics of each class.
- b) Explain the working of Shortest-Job-First Scheduling algorithm with the help of a suitable example. Include the general characteristics, advantages and disadvantages of this algorithm in your discussion.

(4,6)

P.T.O.

(2)

- IV. a) What is the purpose of a process control block? What type of information is contained in it? Discuss.
- b) Explain the concept and working of LRU Page Replacement algorithm with the help of a suitable example. Also discuss its advantages and disadvantages. (2x5)

UNIT - II

- V. a) What do you understand by file access methods? List any two file access methods and compare their characteristics.
- b) Explain the working of SSTF Disk Scheduling with the help of a suitable example. Also discuss its advantages and disadvantages. (2x5)
- VI. a) Discuss the concept and characteristics of contiguous allocation and linked allocation. Highlight the advantages and disadvantages of each.
- b) What do you understand by Swap-Space Management? What are the issues associated with it? Discuss. (6,4)
- VII. Write notes on the following:-
- a) iOS
- b) Deadlock Prevention (2x5)