

(3 Hours)

[Total Marks: 80]

- N.B.:** (1) Question No.1 is **compulsory**.  
 (2) Solve any **three** from remaining **five** questions.  
 (3) Assume Suitable Data if required.

Q1 Attempt any **Four**.

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|---|----|
| (a) What is a system call? Discuss various system calls in short      | 20 |
| (b) What is PCB? Explain various fields of PCB.                       | 05 |
| (c) Compare Paging and Segmentation scheme used in Memory management. | 05 |
| (d) What is a Kernel? Compare Micro and Monolithic Kernel.            | 05 |
| (e) What are the different features of RTOS?                          | 05 |
| (f) Compare and Contrast: thread and process.                         | 05 |

Q2 (a) What is process? Explain the life cycle of a process using process state transition diagram. 10

(b) What is critical section problem? What is the solution to the critical section. 10

Q3 (a) schedulers 10

(b) What is a directory system? What are the different types of directory structure? 10

Q4 (a) Suppose that a disk drive has 5000 cylinders, numbered 0 to 4999. The drive is currently serving a request at cylinder 143, and the previous request was at cylinder 125. The queue of pending requests, in FIFO order is 86,1470,913,1774,948,1509,1022,1750,130

Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests for each of the following disk-scheduling algorithms?

- |   |    |
|---|----|
| a. FCFS   |    |
| b. SSTF   |    |
| c. SCAN   |    |
| d. LOOK   |    |
| e. C-SCAN (change data)   |    |
| (b) Explain working of EDF and RMA real time scheduling algorithms. Differentiate between Deadlock Avoidance and Deadlock prevention. | 10 |

Q5 Write a note on (any 2) 20

- Cyclic Schedulers
- I-Node structure
- File Allocation methods
- Demand Paging