

(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**. 20
- (a) What is a system call? Discuss various system calls in short 05
  - (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
- a) Cyclic Schedulers
  - b) I-Node structure
  - c) File Allocation methods
  - d) Demand Paging