

(3 Hours)

[Total Marks: 80]

- N.B. (1) Question No. 1 is compulsory
 (2) Assume suitable data if necessary
 (3) Attempt any three questions from remaining questions



1

- (a) What is operating system? Explain different functions of OS. (5)
 (b) Explain critical section problem. (5)
 (c) Explain the concept of segmentation. (5)
 (d) What are the characteristics of a Real Time OS? (5)

- 2 (a) Explain the process transition diagram for UNIX operating system. (10)
 (b) Consider the following set of processes with CPU burst time given in milliseconds. (10)

Process	Burst time	Arrival time
P1	10	1
P2	4	2
P3	5	3
P4	3	4

Draw Gantt chart for FCFS and Shortest Remaining Time First (SRTF) and calculate average waiting time and average turnaround time.

- 3 (a) What is a deadlock? Explain the necessary and sufficient conditions for the deadlock. (10)
 (b) Describe process management in LINUX. (10)
- 4 (a) Explain the working of EDF and RMA real time scheduling algorithms. (10)
 (b) Calculate page hit and page miss for the following string using page replacement policies FIFO and LRU. Page frame size is 3.
 2,3,4,2,1,3,7,5,4,3,2,3,1 (10)
- 5 (a) Explain RAID with different levels. (10)
 (b) Explain how UNIX performs file management using I-nodes. (10)
- 6 (a) What are system calls? Explain any five system calls. (10)
 (b) What is semaphore? Give an implementation of bounded buffer producer consumer problem using semaphore. (10)