Total No. of Questions: 8]

SEAT No. : ____

P270

[Total No. of Pages : 2

[6003]-348
T.E. (Computer Engineering)
SYSTEM PROGRAMMING & OPERATING SYSTEM
(2019 Pattern) (Semester-I) (310243)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Attempt Q.1 or Q.2, Q.3 Q.4, or Q.5 or Q.6, Q.7 or Q.8.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagram must be drawn wherever necessary.***
4) ***Assume suitable data if necessary.***

Q1) a) Explain "General loading scheme (using suitable diagram)" with advantages and disadvantages? **[9]**

b) Give complete design of Direct Linking Loader? **[9]**

OR

Q2) a) Give complete design of Absolute Loader with suitable example? **[9]**

b) What is the need of DLL? Differentiate between Dynamic and static linking? **[9]**

Q3) a) Explain the following types of Schedulers. **[9]**

i) Short Term

ii) Long Term

iii) Medium Term

b) Explain seven state process model with diagram? Also explain difference between Five state process model & Seven state process model? **[8]**

OR

P.T.O.

Q4) a) Draw Gantt chart and calculate Avg. turnaround time, Avg. waiting time for the following process using SJF non preemptive and round robin with time quantum 0.5 Unit **[9]**

Process	Burst Time	Arrival Time
P1	2	10
P2	1	10
P3	1	11
P4	1	12

b) What is mean by Threads, Explain Thread lifecycle with diagram in detail? **[8]**

Q5) a) Write a short note on following with example? **[9]**

i) Semaphore ii) Monitor iii) Mutex

b) Explain Deadlock prevention, deadlock avoidance, deadlock detection, deadlock recovery with example? **[9]**

OR

Q6) a) Explain producer Consumer problem & Dining Philosopher problem with solution? **[9]**

b) What is deadlock? State and explain the conditions for deadlock, Explain them with example? **[9]**

Q7) a) Consider page sequence 2, 3, 2, 1, 5, 2, 4, 5, 3, 2, 5, 2 and discuss working of following page replacement policies Also count page faults. (use no. of Frames = 3) **[8]**

i) FIFO

ii) LRU

b) Discuss fixed Partitioning and Dynamic Partitioning in detail. **[9]**

OR

Q8) a) Write a short note on following with diagram **[8]**

i) VM with Paging

ii) VM with Segmentation

b) Explain Page Table structure and Inverted page Table? **[9]**