Total No. of Questions : 8]

SEAT No. : ____

PA-1443

[Total No. of Pages : 2

[5926]-59

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 Q1 or Q2, Q3 or Q4, Q5 or Q6 and Q7 Q8.***
2) ***Figures to the right indicate full marks.***
3) ***Neat sketches 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

Q4) a) Draw Gantt chart and calculate Avg. turnaround time, Avg. Waiting time for the following processes 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 meant by Threads, Explain Thread lifecycle with diagram in detail? **[8]**

P.T.O.

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) What is meant by Fragmentation, Explain Buddy Systems Fragmentation in detail? **[9]**

OR

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

i) VM with Paging

ii) VM with Segmentation

b) Given the memory partition of size 100K, 500K, 200K, 300K, 600K, how would each of the First Fit, Best Fit, Worst Fit algorithm place the processes of 212K, 417K, 426K. Which algorithm makes the most efficient use of memory? **[9]**