

Total No. of Questions : 8]

SEAT No. :

P807

[Total No. of Pages : 2

[5870]-1127

**T.E. (Computer Engineering)**  
**SYSTEMS PROGRAMMING AND OPERATING SYSTEM**  
**(2019 Pattern) (Semester - I) (310243)**

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data if necessary.

- Q1)** a) Explain Differences between static link library and dynamic link library.[8]  
b) What are the different types of Loaders? Explain compile and Go loader in detail. [9]

OR

- Q2)** a) List and explain different loader schemes in detail. [9]  
b) Explain Design of Direct linking loaders and explain required data structures. [8]

- Q3)** a) Compare Compilers and Interpreters. [8]  
b) What is LEX? Explain working of LEX with suitable diagram. [9]

OR

- Q4)** a) Define token, pattern, lexemes & lexical error. [8]  
b) What is a compiler? Explain any two phases of compiler with suitable diagram. [9]

- Q5)** a) What is the need of Process synchronization? Explain Semaphore in detail. [9]  
b) What is Operating System? Explain various operating system services in detail. [9]

P.T.O.

OR

- Q6)** a) Explain preemptive and Non preemptive scheduling in detail. [9]  
b) Explain any two scheduling algorithm with suitable example. [9]

- Q7)** a) What is virtual memory management? Explain address translation in paging system. [9]  
b) Write proper examples and explain memory allocation strategies first fit, best fit and worst fit. Also explain their advantages and disadvantages. [9]

OR

- Q8)** a) Explain any two page replacement strategies in detail. [9]  
b) What is TLB? Explain the paging system with the use of TLB? What are the advantages of TLB? [9]

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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]



Total No. of Questions: 8]

SEAT No. :

**P270**

**[6003]-348**

[Total No. of Pages : 2

**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]



Total No. of Questions : 8]

SEAT No. :

P-7539

[Total No. of Pages : 2

[6180]-47

T.E.(Computer Engineering)

**SYSTEM PROGRAMMING AND OPERATING SYSTEM**  
**(2019 Pattern) (Semester - I) (310243)**

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) Attempt Q. No. 1 or Q. No. 2, Q. No. 3 or Q. No. 4, Q. No. 5 or Q. No. 6 and Q.No 7 or Q.No 8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data, if necessary.

**Q1) a)** Explain in brief Compile and Go loading scheme. What are advantages and disadvantages of it. [10]

b) Describe the concept of DLL? How dynamic linking can be done with or without import. [8]

OR

**Q2) a)** Write short notes on : [10]

- i) Subroutine Linkage
- ii) Overlays

b) With the help of diagram explain General Loading Scheme. [8]

**Q3) a)** List different types of Operating Systems? Describe any two of them.[9]

b) Differentiate Preemptive and non preemptive scheduling. [8]

OR

**Q4) a)** What is time quantum and its significance in Round robin scheduling.[9]

b) Explain multithreaded mode and Process Control block in detail. [8]

**Q5) a)** What is semaphore? Justify how semaphore is used to solve critical section problem. [10]

b) Explain necessary conditions for occurrence of deadlock. [8]

OR

**Q6) a)** Explain hardware approach for Mutual Exclusion with its advantages and disadvantages. [10]

b) Write a solution to Reader Writer problem using Semaphore with Readers have priority. [8]

**Q7) a)** Given a memory partitions of 100K, 500K, 200K, 300K and 600K (in order), how would each of the first fit, best fit and worst fit algo. Place processes of size 212K, 417K, 112K, 426K (in order)? Which also makes the most efficient use of memory. [9]

b) What is internal fragmentation? Explain same with suitable diagram/example. [8]

OR

**Q8) a)** Write and explain Deadlock Avoidance Bankers Algorithm. [9]

b) Compare Paging and Segmentation with the help of example. [8]

