Total No. of Questions : 10]

SEAT No. :

P3631

[Total No. of Pages : 3

[5560]-587

T.E. (Computer Engineering)

SYSTEM PROGRAMMING AND OPERATING SYSTEM

(2015 Course) (Semester - II)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10.***
2) ***Neat diagrams must be drawn wherever necessary.***

Q1) a) What is system software? Explain any four System software's in brief? **[5]**

b) Draw a neat flowchart of Pass-I of two pass macro processor and explain it. **[5]**

OR

Q2) a) What is absolute loader? Explain design of absolute Loader with suitable example and flowchart, also show text card and transfer card for same. **[6]**

b) Write lex program to recognize identifiers, numbers, keywords and relational operators used in "C" program? **[4]**

Q3) a) Draw a general model of compiler and explain all phases in brief. **[6]**

b) Differentiate between Static and Dynamic link libraries? **[4]**

OR

Q4) a) Explain formats of ESD, RLD, TXT and END cards with respect to direct linking loader with suitable example? **[6]**

b) Justify use of Macro name table(MNT) in macro processor? Explain different fields of MNT with suitable example? **[4]**

P.T.O.

Q5) a) Draw Gantt chart and calculate Avg. turnaround time, Avg. waiting time for the following processes using Priority based (non-preemptive) scheduling and SJF (preemptive) scheduling policies. **[6]**

(Consider Low no. as high priority)

Processes	Arrival time	Burst Time	Priority
P1	0	8	1
P2	0	6	2
P3	2	1	3
P4	3	2	0

b) What is operating system? Draw and explain layered approach with advantages and disadvantages. **[6]**

c) What is deadlock? Explain deadlock recovery methods? **[6]**

OR

Q6) a) What are the types of schedulers? Explain them with suitable diagram? **[8]**

b) Explain process control block in detail. **[6]**

c) What is real time OS? Explain its types with suitable examples? **[4]**

Q7) a) What is TLB? Explain in brief. **[5]**

b) Compare fixed and variable sized partitioning. **[3]**

c) What is the need of page replacement policies in virtual memory management? Consider given page sequence 2,3,2,1,5,2,4,5,3,2,5,2 and the size of the frame is 3. Show the output of FIFO, LRU and Optimal, also count page faults for each algorithm. **[8]**

OR

Q8) a) What is internal fragmentation? Explain same with suitable diagram/ example. **[4]**

b) What is virtual memory? Explain Paging with example. **[6]**

c) 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. **[6]**

Q9) a) Write a note on free space management. **[4]**

b) Consider the disk access requests given as 53, 98, 183, 37, 122, 14, 124, 65, 67 where starting head position is - 53. Calculate average seek time using FCFS, SSTF, SCAN and C-SCAN disk scheduling policies and show which policy performs better? **[12]**

OR

Q10)a) Define following terms with respect to disk access : **[3]**

i) Seek time

ii) Rotational Latency

iii) Data transfer time

b) Explain directory structure with its types, also discuss directory, implementation in detail. **[7]**

c) What are the file access methods? Explain them in detail. **[6]**

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