Total No. of Questions : 8]

PC-7607

[Total No. of Pages : 2

[6353]-S-37

T.E. (Computer Engineering)

SYSTEM PROGRAMMING & OPERATING SYSTEM

(2019 Pattern) (Semester - I) (310243)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates :

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.***
2) ***Figuars to the right side indicate marks.***

Scheme of Marking

Q.1 a. Explain Static and Dynamic Linking with suitable diagram and example? [9]

Static Linking with explanation and diagram: 4.5 marks

Dynamic Linking with explanation and diagram: 4.5 Marks

b. Explain complete design of Absolute Loader? Also explain its advantages and disadvantages? [9]

Absolute Loader Scheme: 4 Marks

Diagram: 2 Marks

Advantages and Disadvantages: 1.5 Marks each.

OR

Q.2 a. What is Direct Linking Loader? Explain design of Direct Linking Loader with suitable example? [9]

Direct Linking Loader : 2 Marks

Direct Linking Loader Diagram with explanation : 5 Marks

example: 2 Marks

b. What is self-relocating programs? Explain with the help of loader schemes with neat diagram? [9]

self-relocating programs: 5 Marks

Example with diagram: 4 Marks

Q.3 a. Explain the following types of Schedulers.

i)Preemptive – 4.5 Marks

ii)Non Preemptive – 4.5 Marks [9]

b. Explain seven state process life model with diagram? [8]

Explanation Five state process life model - 4 Marks

State Diagram – 4 Marks

OR

P.T.O.

Q.4 a. Draw Gantt chart and calculate Avg. turnaround time, Avg. waiting time for the following processes using SJF (Non preemption) and round robin with time quantum 2 Units? [9]

Process	Burst Time	Arrival Time
P1	3	0
P2	5	1
P3	2	3
P4	5	9
P5	5	12

SJF: Turnaround time: 5.6ms , Waiting Time: 1.6ms
RR: Turnaround time: 7.2ms , Waiting Time: 3.2 ms

b. What is mean by Process control block – 4 marks, explain with diagram in detail – 4 marks? [8]

Q.5 a. write a short note on following with example?
1. Semaphore - 3 marks
2. Monitor 3 marks
3. Mutex 3 marks [9]

b. Explain Bankers algorithm for deadlock avoidance in detail with suitable example? [9]
Explanation of banker's algorithm: 4.5 marks
Example: 4.5 marks

OR

Q.6 a. Explain producer Consumer problem & Dining Philosopher problem with solution? [9]
Producer Consumer problem with solution – 4.5 marks
Dining Philosopher problem with solution - 4.5 marks

b. What is deadlock prevention? State and explain the conditions for deadlock occurrence? [9]
Explanation deadlock prevention : 4.5 marks
Explain the conditions for deadlock- 4.5 marks

Q.7 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 hits.(use no. of Frames = 3)
i) OPT (Optimal) – 6 page hits- ratio 0.5 - 4 Marks
ii) LRU (Last Recently Used) 5 page hits- ratio 0.42 - 4 Marks [8]

b. Why page size and frame size in paging should be same?What is translation look aside buffer? Describe its importance. [9]
Page size vs frame size - 3M
importance of translation look aside buffer - 6 M

OR

Q.8 a. Write a short note on following with diagram
1. Fixed Partitioning – 4 marks
2. Dynamic Partitioning – 4 marks [8]

b. Explain Placement Strategies: First Fit, Best Fit, Next Fit and Worst Fit. In detail with example? [9]
2 marks each, example 1 marks

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