Total No. of Questions : 10] [Total No. of Printed Pages : 3

Roll No. .....

IT–504(N)

B. E. (Fifth Semester) EXAMINATION, June, 2011

(Information Technology Engg. Branch)

SYSTEM PROGRAMMING AND OPERATING SYSTEM

[IT – 504(N)]

Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt *one* question from each Unit. All questions carry equal marks.

Unit – I

1. (a) Describe the differences between symmetric and asymmetric multiprocessing. What are the *three* advantages and disadvantages of multiprocessor system. 10

   (b) Explain the following types of operating system : 10

   (i) Time sharing

   (ii) Clustered

   (iii) Handheld

2. (a) Explain virtual machine concept briefly. 10

   (b) What is multiprogramming ? How does it affect the system performance with reference to memory and CPU utilization ? 10

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Unit – II

3. (a) Why the synchronization for communication among co-operating processing is necessary ? What are the various forms of interprocess interaction ? 10

(b) What is pre-emption CPU scheduling ? Compute average turnaround time and waiting time for pre-emptive shortest job first scheduling algorithm for the following data : 10

Job	Arrival Time	Burst Time
J1	0	4
J2	2	3
J3	5	6
J4	6	2

4. Consider the following data : 20

Job	Burst Time	Priority
1	10	3
2	1	1
3	2	3
4	1	4
5	5	2

(i) Give a Gantt chart illustrating the exemption of these using FCFS, RR (quantum = 1, and a non-pre-emptive priority scheduling alg.)

(ii) What is turn around time, waiting time and response time for each of the above scheduling alg ?

Unit – III

5. (a) Explain Resource allocation graph algorithm for deadlock avoidance. 10

(b) Explain why sharing a reentrant module is easier when segmentation is used than when pure paging is used. 10

6. Differentiate between the following : 20

   (i) Logical address space and physical address space.

   (ii) Internal fragmentation and external fragmentation.

   (iii) Static relocation and dynamic relocation

   (iv) First fit, best fit and worst fit

Unit – IV

7. (a) What is virtual memory ? Explain demand paging and its advantages. 10

   (b) Explain the role of operating system in security. 10

8. Explain the following : 20

   (i) Security Breaches

   (ii) Thrashing

   (iii) Virtual memory

   (iv) Belady's anomaly

Unit – V

9. (a) Distinguish between global allocation and local allocation. 10

   (b) Describe the selection criteria of a disk scheduling algorithm. 10

10. (a) Suppose, a moving head disk with 100 tracks numbered 0 to 99, is currently servicing a request at track 49 and just finished a request at track 90. If the queue of request is in FIFO order :

    86, 47, 91, 77, 94, 50, 0·2, 75, 30

    compare the performance of FCFS and SSTF disk algorithm. 12

    (b) Explain file access mechanism briefly. 8