Total No. of Questions : 10]

SEAT No. :

P2622

[Total No. of Pages :3

[5153]-598

T.E. (Information Technology)

OPERATING SYSTEM

(2012 Pattern) (Semester - II) (314451)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answers Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.***
2) ***Figures to the right indicate full marks.***

Q1) a) Discuss batch and real time operating system with respect to process scheduling, memory management. **[4]**

b) Explain the concept of virtual machine with its implementation and benefits. Also explain examples of virtual machine. **[6]**

OR

Q2) Consider the following set of processes, with length of CPU burst time given in milliseconds.

Process	Arrival time	Burst time	Priority
P1	0	8	3
P2	1	1	1
P3	2	3	2
P4	3	2	3
P5	4	6	4

Draw the Gantt charts illustrating the execution of these processes using FCFS, SJF (Preemptive And non-pre-emptive)and Priority (Preemptive), Smaller number indicates higher priority. Calculate average waiting time and average turn around time for all the above mentioned scheduling algorithms. **[10]**

Q3) Consider the following snapshot of the system, **[10]**

	Allocation	Max	Available
	R1R2R3	R1R2R3	R1R2R3
P1	0 1 0	7 5 3	3 3 2
P2	2 0 0	3 2 2	
P3	3 0 2	9 0 2	
P4	2 1 1	2 2 2	
P5	0 0 2	4 3 3	

P.T.O.

Answer the following questions using Banker's Algorithm

a) What are the values of Need Matrix?

b) Is the system in the safe mode? If yes, what is the safe sequence?

c) If a request from process PI arrives for (1,0,2), can the request be granted immediately?

OR

Q4) a) Explain with definition, concept of general and binary semaphore. **[5]**

b) Explain classical problem of synchronization in terms of Dining Philosopher problem. **[5]**

Q5) a) Given memory partitions of 100k, 500k, 200k, 300k and 600k (in-order), how would each of First-Fit, Best-Fit and Worst-Fit algorithms place processes of 212k, 417k, 112k,426k? Which algorithm makes the most efficient use of memory? **[8]**

b) What are the steps in-handling page fault? Explain with suitable diagram. **[10]**

OR

Q6) a) Explain the concept of Demand Paging with neat diagram. **[8]**

b) A process references pages in the following order. **[10]**
5 4 2 4 6 5 3 6 2 3 2 4 5 2 6
Determine the number of page faults for FIFO, optimal and LRU page replacement algorithms for 3 page frames

Q7) a) For the given sequence of disk request, determine the total distance travelled by disk head in satisfying the entire request for FCFS, C-SCAN and SSTF algorithms. Initial head position is 120 and total number of cylinders in the disk is 200.

120, 130, 180, 150, 25,10, 105, 90 **[12]**

b) Write a short note on I/O functions. **[4]**

OR

Q8) a) Explain the concept of File Sharing. **[8]**

b) Explain disk free space management techniques. **[8]**

Q9) Write short notes on the following: **[16]**

a) Ubuntu EDGE OS

b) Embedded Linux

c) NACH OS

d) Android OS

OR

Q10)a) Write steps for kernel compilation with necessary commands. **[8]**

b) Write a Pseudo code for simple kernel module and explain procedure for inserting a new module in existing kernel with all necessary steps.**[8]**