Total No. of Questions : 12]

SEAT No. :

P2969

[Total No. of Pages : 3

[5058]-164

T.E. (Information Technology)

OPERATING SYSTEMS

(2008 Course) (Semester - I) (314441)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answer THREE questions from each section.***
2) ***Answer to the Two sections should be written in SEPARATE answer books.***
3) ***Figure to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Describe with the help of neat diagram the interaction of operating system with hardware. **[8]**

b) Draw and explain the architecture of windows 2000. **[8]**

OR

Q2) a) State in brief the four key features of each of the following types of OS: **[8]**

i) Batch

ii) Distributed

iii) Multithreading

iv) Time-sharing

b) Explain modern UNIX kernel with a neat diagram. **[8]**

Q3) a) Consider the following set of processes, with the length of processes given in milliseconds. Solve the problem using FCFS & Round Robin scheduling (Assume time quantum equal to 1). **[12]**

Process	Arrival time	Burst time
P1	0	6
P2	2	2
P3	4	3
P4	6	4
P5	8	5

P.T.O.

i) Draw Gantt chart illustrating the execution of these processes.

ii) Calculate waiting time and turnaround time for each process.

iii) Calculate the average waiting time and turnaround time for all the processes.

b) Explain UNIX Multi-level feedback queue scheduling. **[6]**

OR

Q4) a) What is the difference between Process and Thread? What are the contents of Thread Control Block (TCB). State the advantages and disadvantages of user level threads. **[12]**

b) What is System call? Explain fork () System call. **[6]**

Q5) a) Consider the following state of the system. Check Whether System is in Deadlock State or not. **[8]**

	Allocation matrix				Max matrix				Available vector			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2	2	1	0	0
P1	2	0	0	0	2	7	5	0				
P2	0	0	3	4	6	6	5	6				
P3	2	3	5	4	4	3	5	6				
P4	0	3	3	2	0	6	5	2				

b) Explain the conditions for the occurrence of Deadlock? **[8]**

OR

Q6) a) Implement the Producer Consumer problem using Semaphores and discuss how the critical section requirements are fulfilled. **[8]**

b) What is Inter Process Communication? Explain different methods of IPC. **[8]**

SECTION - II

Q7) a) A process references pages in the following order. **[12]**

3 4 5 6 3 4 7 4 5 6 7 8

Use FIFO, LRU and Optimal page replacement algorithms to find out the number of page faults for the above reference string using 3 page frame.

b) Explain different ways to remove External Fragmentation. **[6]**

OR

Q8) a) Why a translation look aside buffer is used by virtual memory scheme? Describe how translation look aside buffer works with the help of diagram. **[10]**

b) Describe Following memory allocation Strategies. **[8]**

i) First Fit

ii) Best Fit

iii) Worst Fit

Q9) a) Describe any four types of File Organizations. **[8]**

b) Describe Methods of record Blocking with the help of neat diagrams. **[8]**

OR

Q10) a) Explain with Neat diagram Windows 2000 file system. **[8]**

b) Define the following with respect to Disk Scheduling: **[8]**

i) Seek time

ii) Rotational Latency

iii) Bandwidth

Q11) a) How password protection is implemented in UNIX OS? **[8]**

b) State and Explain Different methods for user authentication for security. **[8]**

OR

Q12) Write short note on: **[16]**

a) Virus.

b) Worms.

c) Trojan Horse.

d) Biometric Authentication.