T.Y. B.Sc. Computer Science : III - Operating Systems & Linux

Con. 1410-12. (REVISED COURSE) EX-6459

(3 Hours) [Total Marks : 100

P- TW March 2012 7th April, 2012

N.B. : (1) **All** questions are **compulsory**.
(2) **Figures** to the **right** indicate **marks**.
(3) Illustrations, in-depth answers and diagrams will be appreciated.
(4) Mixing of subquestions is **not allowed**.

1. Write short notes on following :— (Any 4)
   (a) OS services 5
   (b) Segmentation 5
   (c) Features of Linux 5
   (d) Firewalls 5
   (e) Shared memory and Message Passing 5
   (f) Iptables. 5

2. Answer the following questions (any **four**) :—
   (a) Consider the following set of processes with CPU burst time and arrival time. Illustrate the execution of processes. Also calculate average waiting time and turnaround time. 5

Jobs	Arrival Time	Priority	CPU Burst Time
P1	1	4	1
P2	1	1	3
P3	3	1	6
P4	3	2	5
P5	1	3	6

   (b) Write an algorithm using bounded buffer which will prove the synchronization between producer and consumer problem. 5
   (c) Define Thread. Explain in what all ways Threads are different than processes. 5
   (d) List different types of OS. Explain any 2 features of time sharing OS and Real Time OS. 5
   (e) Define critical section. State the requirements that must be meet to solve critical section problem. 5
   (f) Explain 5 state process model in brief. 5

3. Answer the following questions (any **four**) :—
   (a) Consider the following snapshot of a system. A,B,C,D are the resource types. Allocation, MAX and available matrix is as follows :— 5

Allocation

	A	B	C	D
P0	0	0	1	2
P1	1	3	5	4
P2	0	6	3	2

MAX

	A	B	C	D
P0	0	0	1	2
P1	2	3	5	6
P2	0	6	5	2

   Available matrix : [1 4 2 0]
   Total Resources are : [4 14 12 12]
   - Find the content of need array.
   - Find the safe sequence.

   (b) Explain fixed sized partitioned method and variable sized partitioned method with respect to memory management. 5
   (c) Discuss different techniques used for free space management. 5
   (d) Define the following terms : 5
   (1) virus (2) trap door (3) encryption (4) worm (5) authenticity.
   (e) Consider the requested track was 55, 58, and 39,18, 90,160,150, 38,184. Current head position is at location 100. Find the average seek time of Disk using SSTF and SCAN algorithm. 5
   Comment which algorithm is better.
   (f) Diagrammatically step wise explain the concept of page fault handling. 5

[TURN OVER