[4459] – 263

Seat No.	

T.E. (Information Technology) (Semester – I) Examination, 2013
OPERATING SYSTEM
(2008 Course)

Time : 3 Hours | Max. Marks : 100

Instructions : *1) Answer **three** questions from **each** Section.*
*2) Answer to the **two** Sections should be written in **separate** answer books.*
*3) Figures to the **right** indicate **full** marks.*
*4) Assume **suitable** data, if **necessary**.*

SECTION – I

1. a) What microkernel and layered architecture with advantages and disadvantages ? **8**

   b) Write an awk program for calculating total number of First class, Higher second class, Distinction, pass fail from students mark database which is stored as Roll No. % marks **8**

   OR

2. a) Write a shell menu program following operation **8**
      i) List of files in current directory
      ii) Current user name
      iii) Current date
      iv) Display contents of file temp.txt

   b) Write different services of operating system. **8**

P.T.O.

3. a) Explain context switch operation of process with diagram. **6**

   b) For the following snapshot of process calculate the TAT, WT **12**

Process	AT	BT	Priority
A	0	3	2
B	1	6	1
C	4	4	3
D	6	2	4

Using FCFS, SJF (Both) RR Tq : 2ms

OR

4. a) Differentiate between thread and process. **4**

   b) How PCB helps in process management ? Explain the structure of PCB. **8**

   c) Explain Multilevel Queue scheduling. **6**

5. a) Write process structure of reader and writer using semaphore and explain. **6**

   b) For the following snapshot of processes calculate the safe sequence if any using bankers algorithm **10**

	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				

OR

6. a) What is critical section ? What are the requirements for solution of critical section problem ? **8**

   b) How resource allocation graph helps to in Deadlock ? Write the necessary conditions of Deadlock to be occurred. **8**

SECTION – II

7. a) Explain with the help of neat diagram Buddy system of memory management. **8**

   b) Why page size is always power of 2 ? **2**

   c) Calculate the total fragmentation for following requests of processing using **8**

      a) First Fir

      b) Best Fit

      c) Worst fit

      d) Next fit

Holes	**:**	100k	500k	200k	300k	600k
Process	**:**	212k	417k	112k	426k	

OR

8. a) What is virtual memory ? Explain how operating system traces the page fault occurred with diagram. **8**

   b) Define Demand paging. **2**

   c) Given the reference string 7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1. Calculate FIFO, LRU. **8**

9. a) Write short note on the following : **8**

      i) Directory Structure

      ii) File Sharing.

   b) Explain free space management technique with suitable example. **8**

OR

10. a) A disk drive has 500 cylinders, numbered 0 to 499. The drive is currently serving a request at cylinder 255 and the previous request was at cylinder 143. The quene of pending requests in FIFO order is : 84, 147, 91, 177, 286, 341, 78, 488, 38, 130. Starting from current head position, what is the total distance that the disk arm moves to satisfy all pending requests for each of the following disk scheduling algorithms.

    1) FCFS

    2) SSTF

    3) LOOK. **8**

    b) Describe any two types of File Organizations. **8**

11. a) Write security mechanisms in Unix and windows. **8**

    b) Write short note on : **8**

    i) Trojan Horse

    ii) Protection Policy.

OR

12. a) Explain how the access matrix can be implemented effectively. **8**

    b) Explain techniques and security policies to improve the resistance to threats. **8**