

Total No. of Questions : 12]

SEAT No. :

P1144

[Total No. of Pages : 3

[4163] - 351

T.E. (I.T.)

May - June 2012

OPERATING SYSTEMS

(2008 Pattern) (Sem. - I)

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) *Answer three questions from Section-I and three questions from Section-II.*
- 2) *Answers to the Two Sections should be written In separate books.*
- 3) *Figures to the right indicate full marks.*
- 4) *Assume suitable data, if necessary.*

SECTION - I

- Q1) a)** What is an Operating system? State and explain the basic functions of operating system. **[8]**
- b)** State in brief key features of each of the following types of operating systems **[8]**
- i) Real time
 - ii) Distributed
 - iii) Parallel
 - iv) Batch

OR

- Q2) a)** Compare the following **[8]**
- i) System Calls & Library Functions
 - ii) Shell & Kernel
- b)** Discuss various architectures of operating systems. **[8]**
- Q3) a)** What is thread? Define User Level Thread (ULT) and Kernel Level Thread (KLT). How is ULT mapped to KLT? **[10]**
- b)** Explain the concept of Real Time scheduling **[6]**

OR

P.T.O

Q4) a) Consider the following set of processes : **[10]**

Processes	Arrival Time	Processing Time
P1	0	7
P2	3	2
P3	4	3
P4	4	1
P5	5	3

Draw a Gantt Chart and find out average waiting-time and average turn-around time for

i). FCFS ii) SJF iii) RR

b) What is Process? Explain Process States in detail. **[6]**

Q5) a) Implement the producer-Consumer problem using monitor and discuss how the critical section requirements are fulfilled. **[8]**

b) Explain the following terms: **[10]**

- i) Mutual Exclusion
- ii) Semaphore
- iii) Deadlock
- iv) Deadlock detection
- v) Message Passing

OR

Q6) a) Write a semaphore solution for readers-writers problem. **[8]**

b) Explain the concept of Context Switching with neat diagram. **[5]**

c) Explain the principles of Deadlock **[5]**

SECTION - II

Q7) a) Explain with neat diagram the buddy system memory management. **[8]**

b) Discuss with examples placement algorithms in fixed partitioning. **[8]**

OR

- Q8) a) For the Given reference string, determine the number of page faults for FIFO, Optimal & LRU page Replacement Policies with 3 page frame available in memory. [12]

Reference String : 2 4 1 2 3 2 4 5 6 2 8 7 2 6

- b) What are the benefits of virtual memory? Any four. [4]
- Q9) a) With the help of neat diagram discuss file allocation methods. [12]
- b) Explain any 4 types of file organization methods. [6]

OR

- Q10) a) For the give sequence of disk request, determine the total distance traveled of 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. Assume head in moving in the direction of decreasing track number. [12]

20 165 40 190 10 60 140 105 180

- b) Write short note on IO Buffering [6]
- Q11) a) How security is implemented in Windows 2000. [8]
- b) Explain how access matrix can be implemented effectively [8]

OR

- Q12) a) Describe different approaches on Intrusion detection. [8]
- b) Describe different methods of user authentication. [8]
