COMP 5-6 (RC)

T.E. (Computer) (Semester – V) Examination, May 2010
(Revised Course)
OPERATING SYSTEMS

Duration : 3 Hours Max. Marks : 100

Instructions : *i) Answer **five full** questions by selecting at least **one** from **each** Module.*
*ii) **Make** appropriate assumptions **wherever** necessary.*
*iii) **Write** answers in the **same** sequence of questions.*

MODULE – 1

1. a) Give the process state transition diagram with one suspend state. Discuss the disadvantages and mechanisms to overcome these disadvantages. **10**
   b) Explain Rate Monotonic scheduling. **10**
2. a) Explain the dining philosopher problem. Give a solution using monitor. **6**
   b) What are two differences between user-level threads and kernel-level threads ? Under what circumstances is one type better than the other ? **4**
   c) Explain UNIX SVR4 scheduling. **6**
   d) Discuss any 4 characteristics of RTOS. **4**

MODULE – 2

3. a) Explain the necessary conditions for a deadlock. **6**
   b) Discuss the Bankers algorithm. **6**
   c) With the help of a neat diagram explain how paging process takes place. **8**
4. a) Explain clock page replacement algorithm and modified clock page replacement algorithm with the help of a diagram. For a frame size of 3, and the reference string as 2, 3, 2, 1, 5, 2, 4, 5, 3, 2, 5, 2 find the number of page faults. **10**
   b) Explain multilevel paging and inverted page table. **8**
   c) What is demand cleaning and pre cleaning ? **2**

MODULE – 3

5. a) Discuss the 6 basic file operations. **6**
   b) Give the NTFS volume layout and explain. **6**
   c) With the help of a neat diagram explain the UNIX I/O subsystem. **8**

P.T.O.

6. a) Consider a disk drive with 250 cylinders numbered from 0-249, the disk head is initially located at track 100, the requests tracks in the order received by the disk scheduler are 55, 58, 39, 18, 90, 160, 150, 38, 184. What is the total distance in cylinders that the disk arm moves to satisfy all pending requests using SSTF scheduling algorithm ? 5

b) With a neat diagram explain the UNIX i-node structure. 6

c) How is bad block recovery done ? Explain. 6

d) Explain the following terms, CAV, CLV, Seek time and rotational latency. 3

MODULE – 4

7. a) Explain the various categories of attack. 6

b) Can a Trojan horse attack be prevented by using a trusted system ? Justify. 6

c) Write a shell script to search 5 different patterns in a single file using shift statement and the positional parameters. 8

8. a) Write a shell script using the system time to display the message "good morning" or "good afternoon" or "good evening". 4

b) Discuss the password selection strategies. 8

c) Given the file emp.lst below perform the following operations : 8

Sr. No.	Name	Designation	Department
056	|Mike	|Assistant Professor	|Electrical
036	|Shabbi	|Technical Assistant	|Electronics
042	|Arun	|Lecturer	|Mechanical
072	|Melita	|Lecturer	|Civil

1) With a simple advanced filter place all the employees according to their designation to different files.

2) Use a advanced filter to replace only the first occurrence of the character "|" in every line with "@".

3) Find out the unique designation from the above file using a simple filter.

4) Using a simple filter compress the alphabets ss in the word Assistant to a single s.