15/6/16

Comp 5 – 6 (RC)

T.E. (Computer) (Semester – V) (RC) Examination, May/June 2016
OPERATING SYSTEMS

Duration : 3 Hours | Total Marks :100

MODULE – 1

1. a) What is an operating system ? List and briefly explain any two operating systems known to you. **6**

   b) Define critical section. How can we solve a critical section problem ? **8**

   c) What is a semaphore ? State and explain the different types of semaphores. **6**

2. a) Write a short note on real time scheduling. **6**

   b) State and explain UNIX process state transition diagram. **6**

   c) Draw Gantt chart and calculate average wait time and average turnaround time for the following scheduling algorithms.

      i) Shortest remaining time first scheduling

      ii) Non preemptive priority based scheduling. **8**

Process	Arrival time (ms)	Burst Time (ms)	Priority
P1	0	14	7
P2	1	7	1
P3	3	2	3
P4	5	8	2

Assume lower numbers means high priority.

MODULE – 2

3. a) Given memory partitions of 100Kb , 500 kb, 200 Kb, 300 Kb, 600 Kb. How would the first fit, best fit and worst fit algorithms place the process A : 215 Kb, process B : 418 Kb, process C : 113 Kb and process D : 428 Kb ? 6

   b) Can a process recover from deadlocks ? If so how does it accomplish it ? 6

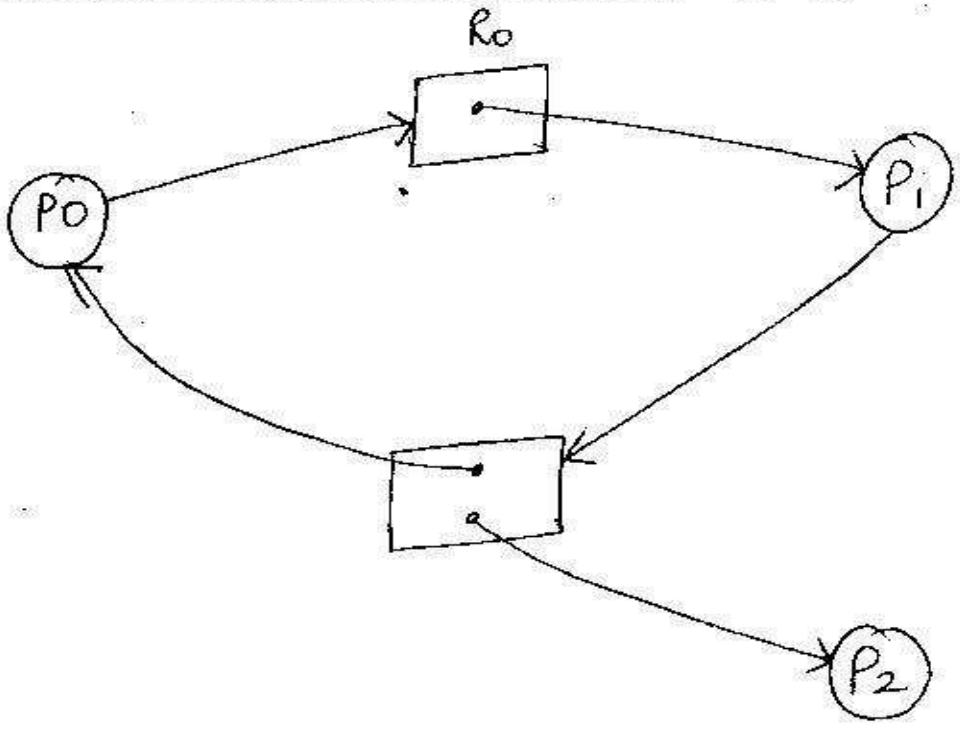
   c) When do page fault occurs ? Describe the action taken by the operating system when page fault occurs. 8

4. a) Differentiate between a page and a frame. 2

   b) With the help of an example, explain LRU page replacement algorithm. 6

   c) What is multilevel paging ? What problem does it address ? 6

   d) Given the following resource allocation graph, draw the equivalent process wati for graph. Is there a likelihood of a deadlock ? Justify your answer. 6



MODULE – 3

5. a) Discuss any 4 basic file operations. 8

   b) Describe acyclic graph directory structure. 6

   c) Discuss file allocation in UNIX file management. 6

6. a) Explain different steps in a DMA transfer. 6

   b) Explain any 2 key features of New Technology File System (NTFS). 6

   c) Is the following assertion true ? Justify your answer. 4
   "None of the disk scheduling disciplines, except FCFS, are truly fair (starvation may occur)".

   d) What is a buffer ? What is the significance of buffering ? 4

MODULE – 4

7. a) List the advanced antivirus techniques. Explain any one of them. 6

   b) Write a shell program to input two numbers from the user and display their product. 5

   c) Explain the following terms :
      i) Trojan Horse
      ii) Trapdoors. 6

   d) Write shell commands for the following :
      i) To display first 4 lines of a file
      ii) To change your password
      iii) To know your home directory. 3

8. a) Define intruders . State and explain the different classes of intruders. 6

   b) Write a shell script for the following menu :
      1) List of files
      2) Number of users of the system
      3) Todays date
      4) Quit to UNIX. 8

   c) What are the fundamental requirement addressed by computer security ? 6