20-6-15 CM

COMP 5-6 (RC)

T.E. (Computer) (Semester – V) (RC) Examination, May/June 2015
OPERATING SYSTEMS

Duration : 3 Hours | Total Marks : 100

Instruction : *Attempt **any five** questions by selecting atleast **one** question from **each** Module.*

Module – I

1. a) State and explain the readers and writers problem. Write a symbolic program or code for the same. **8**

   b) Determine average waiting time and average turn around time using following scheduling algorithms : **7**

      i) Shortest Remaining Time Next (SRTN)

      ii) Round Robin with time slice 3 units of time.

   Make use of Gantt charts. Assume lower number means higher priority. In case of tie use FCFS to break the tie.

Process	Arrival Time	Burst Time
P_1	3	10
P_2	1	04
P_3	2	06
P_4	0	12
P_5	2	20

   c) Differentiate between Threads and Processes. **5**

2. a) What is mutual exclusion ? What are the requirements for mutual exclusion. **6**

   b) With the help of example explain Race condition. **4**

   c) Explain and justify how multilevel queue scheduling different from multilevel feedback queue scheduling. **7**

   d) Write short note on Monitors. **3**

P.T.O.

Module – II

3. a) Explain different steps in handling page fault. **6**

   b) With the help of example explain what is deadlock ? Also state and explain necessary conditions for deadlock. **6**

   c) Consider following snapshot of a system and answer the following questions using Banker's algorithm. **8**

Process	Allocated				Max				Available			
	R_1	R_2	R_3	R_4	R_1	R_2	R_3	R_4	R_1	R_2	R_3	R_4
P_1	0	0	1	2	0	0	1	2	2	1	0	0
P_2	2	0	0	0	2	7	5	0				
P_3	0	0	3	4	6	6	5	6				
P_4	2	3	5	4	4	3	5	6				
P_5	0	3	3	2	0	6	5	2				

   i) Compute need matrix.

   ii) Is the system in safe state ? Find safe sequence.

   iii) If a request from process P_3 arrives for (0, 1, 0, 0) can the request be granted immediately ?

4. a) Write short note on Demand Paging. **4**

   b) What is Belady's anomaly ? Explain with an example. **6**

   c) Explain multilevel paging and inverted page table. **6**

   d) Differentiate between logical address space and physical address space. **4**

Module – III

5. a) Write short note on windows file management. **6**

   b) What is sector sparing ? **3**

   c) Write short note on DMA. **6**

   d) What are bad blocks ? What are the different methods to handle bad blocks ? **5**

6. a) Write short note on unix file management. 5

   b) Explain what do you mean by buffering and spooling with respect to Kernel I/O subsystem. 7

   c) Suppose that a disk drive has 2500 cylinders numbered from 0 to 2499. The drive is currently serving the request at cylinder 143 and the previous request was at cylinder 125. The queue of pending request in FIFO order is : 80, 400, 2300, 1500, 1050, 2000, 100, 1888, 1580, 1700.

   Starting from the 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 ? 8

   i) C – SCAN ii) LOOK

Module – IV

7. a) Write short notes on :

   i) Worms ii) Access matrix 8

   b) Explain following linux command :

   i) pwd ii) ls iii) who 6

   c) Write shell script to find simple interest values are to be taken from the user. 6

8. a) Explain types of threats. 6

   b) Explain the use of chmod command in linux with an example. 4

   c) Write shell script to print multiplication table of any number taken from the user. 5

   d) What is digital immune system ? 5