K.J. Somaiya Institute of Management Studies and Research
Vidyanagar, Vidyavihar, Mumbai 400 077

Program: **MCA** *(Batch2018-21), Sem-II*
Subject : Operating System
Endterm Exam

Max Time : 3 hours
Max Marks: 50   **Date : 22nd April 2019**

N.B. : (1) All Questions carries equal marks.
         (2) Question 1 is compulsory.
         (3) Attempt any 4 questions from Q2 to Q7.

(1)   Explain the FCFS, Preemtive and non-preemptive versions of SJF and   10 M
         Round Robin (time slice = 4) scheduling algorithms with grant charts for
         the four processes given. Compare their average turn around time and
         waiting time.

Process	Arival Time	Burst Time
P1	0	8
P2	1	10
P3	2	2
P4	3	5

(2)   Considering a system with five processes P0 through P4 and three   10 M
         resources types A, B, C. Resource type A has 10 instances, B has 5
         instances and type C has 7 instances. Suppose at time t0 following
         snapshot of the system has been taken:

Process	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P0	0	1	0	7	5	3	3	3	2
P1	2	0	0	3	2	2			
P2	3	0	2	9	0	2			
P3	2	1	1	2	2	2			
P4	0	0	2	4	3	3			

1. What will be the content of the Need matrix?

2. **Is the system in safe state? If Yes, then what is the safe
   sequence?**

3. What will happen if process P1 requests one additional instance
   of resource type A and two instances of resource type C?

(3)   Explain different levels of RAID   10 M

(4)   How many pages faults occur for LRU algorithm for the following   10 M
        reference string 1,2,3,4,5,3,4,1,6,7,8,7,8,9,7,8,9,5,4,5,4,2 for four
        pages frames?

(5) (a) What is thread? Explain various kinds of threads in detail   5 M

     (b) Under what circumstances do page faults occur? Describe the actions   5 M
          taken by the operating system when a page fault occurs.

(6)   What is Dinning philosopher problem? Write Solution using semaphore   10 M
        implementation.

(7)   Suppose a disk drive has 400 cylinders, numbered 0 to 399. The driver   10 M
        is currently serving the request at cylinder 120 and previous request
        was at cylinder 140. The queue of pending request in FIFO order is :-

        86, 147, 312, 91, 177, 48, 309, 222, 175, 130

        Starting from the current position, what is the total distance in cylinders
        that the disk arm moves to satisfy all pending request for each of the
        following disk scheduling algoritm ?

            i)   SSTF ii) SCAN iii) C- SCAN

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