

Program: MCA (Batch2017-20), Sem-I Subject : Operating System

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**Program: MCA (Batch 2017-20), Sem-I
Subject : Operating System
End Term Exam**

**Time : 3 hours
Max Marks: 50**

Date : 29th Nov 2017

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

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

- (2) **What is thread? Explain various kinds of threads. Explain thread life cycle** **10 M**
- (3) **What is Dinning philosopher problem? Write Solution using semaphore implementation.** **10 M**
- (4) **Considering a system with five processes P0 through P4 and three 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:** **10 M**

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Process	Allocation	Max	Available
	A B C	A B C	A B C
P ₀	0 1 0	7 5 3	3 3 2
P ₁	2 0 0	3 2 2	
P ₂	3 0 2	9 0 2	
P ₃	2 1 1	2 2 2	
P ₄	0 0 2	4 3 3	

- i) What will be the content of the Need matrix?
- ii) Is the system in safe state? If Yes, then what is the safe sequence?
- iii) What will happen if process P₁ requests one additional instance of resource type A and two instances of resource type C?
- iv) Is the request from process P₁(0, 1, 2) can be granted immediately.

(5) (a) How many pages faults occur for Optimal Page replacement algorithm for the following 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 M

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

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

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 algorithm?

- i) SSTF ii) SCAN iii) C- SCAN

(7) Explain different levels of RAID 10 M
