B.Tech 4th Sem (CO) Dec 2019
Operating System CSCP-20

M.M=50

Note: Attempt all the questions

Q1. a) What are principal advantages and disadvantages of multiprogramming? (5)

b) What information about a process need to be saved, updated when context switching takes place. (5)

Q2. a) Define multilevel feedback queue scheduling? Explain. (5)

b) Give the relation b/w time quantum of RR scheduling and AWT (if possible draw graph). (5)

Q3. Give the difference b/w Mutex and semaphores? Explain the types of semaphores? (10)

Q4. a) A system that uses Banker's algorithm for deadlock has five processes and four set of resources.

Processes	Current Loan				Maximum Need				Total resources			
	A	B	C	D	A	B	C	D	A	B	C	D
1	1	0	2	0	3	2	4	2	13	13	9	13
2	0	3	1	2	3	5	1	2				
3	2	4	5	1	2	7	7	5				
4	3	0	0	6	5	5	0	8				
5	4	2	1	3	6	2	1	4				

Is the state of the system is safe or not. Explain your answer. (6)

or

a) Given the reference to the following pages by a program

0, 9,0,1,8 1,8,7,8,7 1,2,8,2,7 8,2,3,8,3

How many page faults will occur if the program has three page frames available to it and uses:

1)LRU replacement

2)Optimal replacement

3)Second chance algorithm (6)

b) Explain how linearly ordering resources help to prevent the deadlock? (4)

Q5. a) Define the concept of pure demand paging (with diagram). What is the role of lazy swapper in it and how performance of demand paging can be calculated? (6)

or

a) Consider the following sequence of disk tracks requests 27,129,110,186,147,41,10,64,120. Assume that initially the head is at track 30 and is moving in the direction of decreasing track numbers. Compute the no. of tracks the head traverses using FCFS, SSTF and elevator algorithms. (6)

b) Suppose the time to service a page fault is on an average 10ms, while a memory access time takes 1 microsecond. Then what is the average memory access time for a 99.99% hit ratio. (4)