19/05/2025 SE IT SEM-IV C-SCHEME OS QP CODE: 10083395

Time :(3Hours) **Total Marks: 80**

N.B. 1) Question **no.1 is compulsory**
2) Solve any **Three** questions from remaining five.
3) Assume suitable data and draw diagram wherever required.

Q1. Attempt **any four** Marks

a. What are various objectives and functions of Operating System? **5**

b. Differentiate between Thread and Process. **5**

c. Write short note on Distributed Operating System. **5**

d. Explain Paging with the help of diagram and example **5**

e. Explain Race condition with example. **5**

Q2. a. Compare and contrast allocation methods: Contiguous allocation, Linked allocation and Indexed Allocation. **10**

b. Assume the following processes arrive for execution at the time indicated and length of cpu burst time given in msec. **10**

Process name	Burst Time(ms)	Priority	Arrival Time
P1	8	3	3
P2	1	1	1
P3	3	2	2
P4	2	3	3
P5	6	4	4

For the above process parameters, find average waiting time and average turnaround time for following scheduling algorithms

1. FCFS
2. SJF
3. Non-preemptive priority
4. Round Robin (Quantam 2units)

1.Draw the Gantt chart for FCFS, SJF, Priority(preemptive) , Round Robin(quantum=4)scheduling
2. Calculate average waiting time for each of the above algorithm.

Q3. a. Give the explanation of necessary conditions for deadlock. Explain how a resource allocation graph determines a deadlock. **10**

b. What is Internal fragmentation? Explain static partitioned allocation with partition sizes 400,180, 100, 300, and 45. Assuming First fit and Best fit method indicate the memory status after memory request for sizes 95, 180, 285, 380, 30. **10**

Q4.	a.	What is RAID? What are the different RAID levels?	**10**
	b.	What is a thread? How multithreading is beneficial? Compare and contrast different multithreading models.	**10**
Q5.	a.	What is open-source operating system? What are the design issues of Mobile operating system and Real time operating system?	**10**
	b.	What is semaphore and its types? How the classic synchronization problem - Dining philosopher is solved using semaphores?	**10**
Q6.	a.	Consider the reference string7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1 and four free frames which are empty initially. How many page faults would occur for replacement by 1. LRU 2. FIFO 3. Optimal page replacement algorithms.	**10**
	b.	Write short note on Swapping and also explain how logical address is converted into physical address?	**10**
