4UPCS009

Ans-2 Process synchronization is the task of coordinating the execution of processes in a way that no two process can have access to same shared resource.

→ It is needed especially in multiprocess systems.

→ Critical Section is a section code which can be accessed by a signal process at a specific point of time.
The section consists of resources that are needed to be accessed by other processes.

Entry is handled by → wait()
Exit → signal()

In critical section only a single process can be accessed or executed, others wait.

⇒ Rules

→ 1. Mutual Exclusion => it is a type of binary semaphore which is used to control access of shared resources. Not more than one process can execute at same time.

2. Progress :- It is used when no process is in critical section, and some process wants to get in. In the remainder section will be decided which process will go in, in finite time

3. Bound waiting => there is a limit of number of process to get in critical section.
When limit is reached system must allow request to process to get into critical section.

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Ans-4

	1/5	2/5	3/5	4/5	5/5	1/4	2/4	3/4	4/4	1/3	2/3	3/3	1/2	2/2	1	
queue	P_1	P_1	P_1	P_1	P_1	P_2	P_2	P_2	P_2	P_3	P_3	P_3	P_4	P_4	P_5	
time	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Process	Arrival	Burst	started	Comp.	TA	WT
P_1	0	5	0	5	5	0
P_2	3	4	5	9	6	2
P_3	5	3	9	12	7	4
P_4	6	2	12	14	8	6
P_5	7	1	14	15	8	7
					11+16+7	12+7
					18+16	19
					34	

Avg TA = $34/5 = 6.8$

Avg WT = $19/5 = 3.8$

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Ans-3

	Semaphores	Monitors
1.	It is an integer ~~value~~ variable	It is abstract
2.	It indicates number of shared resources	It contains shared variables and set of procedures which operate on them.
3.	When a process access shared resources it will perform wait(). and when it releases it performs signal().	When any process is required to access shared variables. in monitor, it needs to access it through procedures
4.	Semaphores do not have condition variables	Monitor have condition variables

Ans-1 According to optimal non preemptive mode.

Sequence will be -> ~~Y, Z, X~~ Y, Z, X.

Y -> Burst Time = 1
Z -> ——— = 4
X -> ——— = 6

		WAT	TAT
->	X ->	1	1
	Y ->	0	5
	Z ->	5	11
	Avg	2	5.67

CPU	Time
Y	0
Z	1
Z	2
Z	3
Z	4
X	5
X	6
X	7
X	8
X	9
X	10