Section E

Q.1) consider the following processes with arrival times & burst times:-

Process	Arrival Time	Burst Time
P1	0	5
P2	1	3
P3	2	6

Calculate the average waiting time using FCFS scheduling

→ W.T = TAT − BT

TAT = CT − A.T

Process	A.T	B.T	C.T	TAT	W.T
P1	0	5	5	5-0=5	5-5=0
P2	1	3	8	8-1=7	7-3=4
P3	2	6	14	14-2=12	12-6=6

$$A.W.T = \frac{0+4+6}{3} = \frac{10}{3} \approx 3.33$$

Q2) Consider the following process with Arrival times & burst times

Process	Arrival Time	Burst time
P1	0	3
P2	1	5
P3	2	1
P4	3	4

calculate the average turnaround time using Shortest Job First (SJF) Scheduling

→

Process	Arrival Time	Burst Time	completion time	TAT
P1	0	3	3	3
P2	1	5	13	12
P3	2	1	4	2
P4	3	4	8	5

$$\text{Average TAT} = \frac{3+12+2+5}{4} = \frac{22}{4} = 5.5$$

Q.3) Consider the following processes with arrival time, burst times & priorities

process	Arrival Time	Burst Time	Priority
P1	0	6	3
P2	1	4	1
P3	2	7	4
P4	3	2	2

calculate average waiting time using Priority Scheduling

→

Process	AT	BT	Priority	C.T	TAT	W.T
P1	0	6	3	6	6	0
P2	1	4	1	10	9	5
P3	3	2	2	12	9	7
P4	2	7	4	19	17	10

Average = $\frac{22}{4} = 5.5$

Q4) consider the following processes with arrival times and burst times, & the time quantum for Round Robin scheduling is 2 ~~units~~ units:-

Process	Arrival	Burst time
P1	0	4
P2	1	5
P3	2	2
P4	3	3

calculate the average turnaround time using Round Robin ~~&~~ Scheduling

→

Process	Arrival	B.T	C.T	TAT
P1	0	4	10	10
P2	1	5	14	13
P3	2	2	6	4
P4	3	3	13	10

Average TAT = $\frac{37}{4} = \boxed{9.25}$

→

Process	AT	BT	Priority	C.T	TAT	W.T
P1	0	6	3	6	6	0
P2	1	4	1	10	9	5
P3	3	2	2	12	9	7
P4	2	7	4	19	17	10

$$\text{Average} = \frac{22}{4} = 5.5$$

Q.4) consider the following processes with arrival times and burst times, & the time quantum for Round Robin scheduling is 2 ~~min~~ units:-

Process	Arrival	Burst time
P1	0	4
P2	1	5
P3	2	2
P4	3	3

calculate the average turnaround time using Round Robin scheduling

→

Process	Arrival	B.T	C.T	TAT
P1	0	4	10	10
P2	1	5	14	13
P3	2	2	6	4
P4	3	3	13	10

$$\text{Average TAT} = \frac{37}{4} = 9.25$$

Q.5) Consider a program that uses the fork() system call to create a child process. Initially, the parent process has a variable x with a value of 5. After forking, both the parent & child processes increment the value of x by 1
What will be the final values of x in the parent & child processes after the fork() call?

→

Parent = 5+1=6
child = 5+1=6