Part E

1. Consider the following processes with arrival times and burst times:
Process	Arrival Time	Burst Time
P1	0	5
P2	1	3
P3	2	6
Calculate the average waiting time using First-Come, First-Served (FCFS) scheduling.

Q1 . Calculate the average waiting time using First-Come, First-Served (FCFS) scheduling.

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

Solution:-

Process	Arrival	Burst time	Response time	Wait time	Total Turn around time
P1	0	5	0	0	5
P2	1	3	4	4	7
P3	2	6	6	6	12
				3.3333333333	
			Solution→	**3333**	

Gantt Chart

2. Consider the following processes with arrival times and 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.

Q2 .Calculate the average turnaround time using Shortest Job First (SJF) scheduling.

Process	Arrival	Burst time
P1	0	3
P2	1	5

P3	2	1
P4	3	4

Solution:-

Process	Arrival	Burst time	Response time	Wait time	Total Turn around time
P1	0	3	0		3
P2	1	5	8		12
P3	2	1	3		2
P4	3	4	4		5
				Solution →	5.5

Gantt Chart P1 P3 P4 P2

0 3 4 8 13

3. Consider the following processes with arrival times, burst times, and priorities (lower number indicates higher priority):

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

Calculate the average waiting time using Priority Scheduling.

Q3 Calculate the average waiting time using Priority Scheduling.

Process	Arrival	Burst time	Priority	Response time	Wait time	Total Turn around time
P1	0	6	3	0	0	6
P2	1	4	1	6	5	9
P3	2	7	4	12	10	17
P4	3	2	2	10	7	9
				Solution →	5.5	

Gantt Chart P1 P2 P4 P3

0 6 10 12 19

4. Consider the following processes with arrival times and burst times, and the time quantum for Round Robin scheduling is 2 units:

Process	Arrival Time	Burst Time
P1	0	4

P2	1	5
P3	2	2
P4	3	3

Calculate the average turnaround time using Round Robin scheduling.

Q4 Calculate the average turnaround time using Round Robin scheduling.

Process	Arrival	Burst time	Response time	Wait time	Total Turn around time
P1	0	4	0	6	10
P2	1	5	2	1+6+1=8	13
P3	2	2	4	2	4
P4	3	3	6	7	10
u=2units				Solution→	9.25

Q4 Calculate the average turnaround time using Round Robin scheduling.

Process	Arrival	Burst time	Response time	Wait time	Total Turn around time				
P1	0	4	0	6	10				
P2	1	5	2	1+6+1=8	13				
P3	2	2	4	2	4				
P4	3	3	6	7	10				
u=2units				Solution→	9.25				
Gantt Chart	P1	P2	P3	P4	P1	P2	P4	P2	
	0	2	4	6	8	10	12	13	14

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 and child processes increment the value of x by 1.
What will be the final values of x in the parent and child processes after the fork() call?

Solution → Main=5
| fork()
child=6 main =6
Because child and main will have separate memories hence, both will contain the value 6.