

Assignment \Rightarrow 2

Part \Rightarrow E

(Ques) Consider the following process with arrival time and burst time.

Calculate the ^{average} waiting time using FCFS First Come First Serve scheduling.

Process	Arrival Time	Burst Time	Response Time	Waiting Time	Turn Around Time
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P ₁	0	5	0	5 - 0 = 0	5 - 0 = 5
P ₂	1	3	5	7 - 3 = 4	8 - 1 = 7
P ₃	2	6	8	12 - 6 = 6	14 - 2 = 12

P ₁	P ₂	P ₃
0	5	8

14 \rightarrow CT

* Response time \Rightarrow The process gets CPU first time.

* Waiting time \Rightarrow The time at which process waits to get the CPU.

$$WT = (RT - AT) \quad WT = (TAT - BT)$$

* TAT \Rightarrow (CT - AT)

OR

$$(BT + WT)$$

$$\text{Average Waiting Time} = \frac{0 + 4 + 6}{3} = \frac{10}{3} = 3.33$$

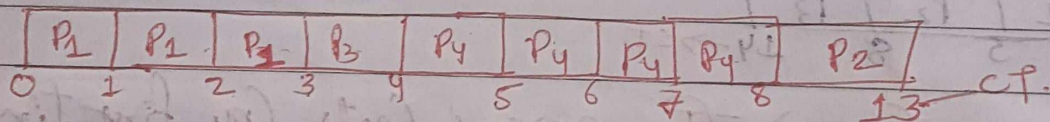
Ans

2) Consider the following processes with arrival times and burst time:-

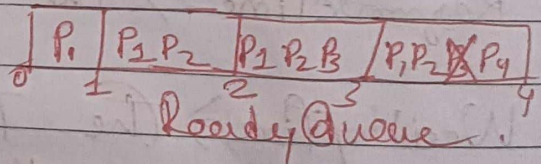
Calculate the average turnaround time using Shortest Job First (SJF) scheduling: (SJF With Preemption).

Process Arrival Time Burst Time Response Time Waiting Time Turnaround Time.

P ₁	0	3	0	3-3=0	3-0=3
P ₂	1	5	8	12-5=7	13-1=12
P ₃	2	1	3	2-2=1	4-2=2
P ₄	3	4	4	5-4=1	8-3=5



P₁ = ~~3~~ ~~2~~ ~~1~~
P₂ = ~~5~~ ~~4~~ ~~3~~ ~~2~~ ~~1~~
P₃ = ~~1~~
P₄ = ~~4~~ ~~3~~ ~~2~~ ~~1~~



$$WT = TAT - BT$$

$$TAT = CT - AT$$

So, Average Turnaround Time is.

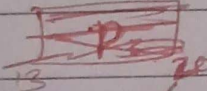
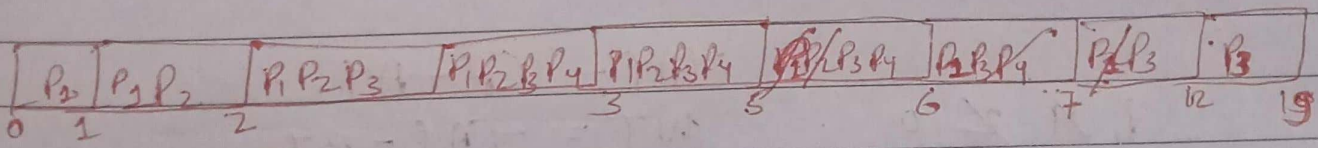
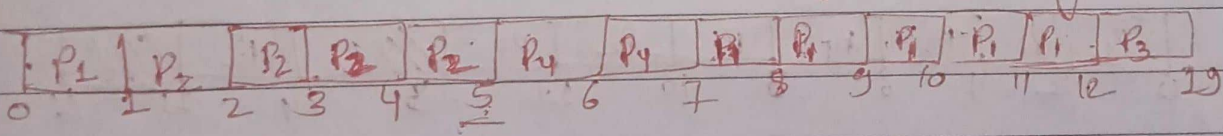
$$\begin{aligned} &= (3 + 12 + 2 + 5) / 4 \\ &= 22 / 4 \\ &= 5.5 \end{aligned}$$

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

Process	Arrival Time	Burst Time	Priority	Response Time	Turnaround Time	Waiting Time
P ₁	0	6	3	0	12 - 0 = 12	12 - 6 = 6
P ₂	1	4	1	1	5 - 1 = 4	4 - 4 = 0
P ₃	2	7	4	12	19 - 2 = 17	17 - 7 = 10
P ₄	3	2	2	5	7 - 3 = 4	4 - 2 = 2

Calculate the average waiting time using Priority Scheduling (preemptive).

(Lower the Number indicates higher Priority).



$P_1 = 6 - 0 = 6$
 $P_2 = 4 - 1 = 3$
 $P_3 = 7 - 6 = 1$
 $P_4 = 2 - 0 = 2$

$TAT = CT - AT$
 $WT = TAT - BT$

So, Average Waiting Time is.
 $= (6 + 0 + 10 + 2) / 4 = \frac{18}{4}$

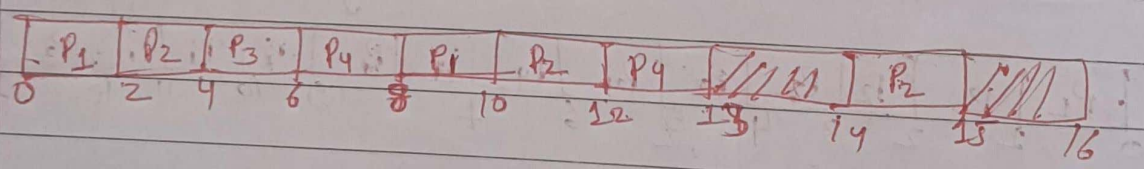
Average Waiting Time = 4.5

Ques.) 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	Response Time	Turn Around Time	Waiting Time
P ₁	0	4	0	10 - 0 = 10	10 - 4 = 6
P ₂	1	5	2	15 - 1 = 14	14 - 5 = 9
P ₃	2	2	4	6 - 2 = 4	4 - 2 = 2
P ₄	3	3	5	13 - 3 = 10	10 - 3 = 7

Calculate the Average turn around time using Round Robin scheduling.

Time Quantum 2



$TAT = CP - AT$
 $WT = TAT - BT$
 $P_1 \neq 0$
 $P_2 \neq 0$
 $P_3 \neq 0$
 $P_4 \neq 0$
 So, Average turn around time is

$$= \frac{(10 + 14 + 4 + 10)}{4}$$

$$= \frac{38}{4}$$
 Average turn around time = 9.5
Ans