MAHAVIR EDUCATION TRUST'S

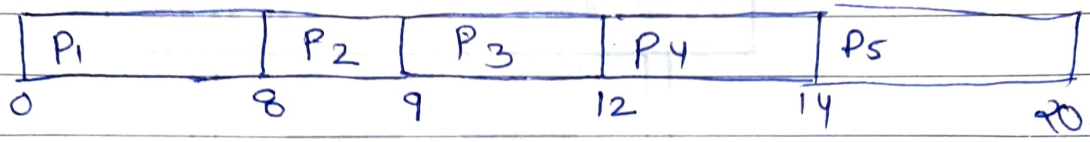
Shah & Anchor Kutchhi Engineering College

Date :

Que

Process	Arrival Time	Burst Time	Priority
P_1	0	8	3
P_2	1	1	1
P_3	2	3	2
P_4	3	2	3
P_5	4	6	4

1) FCFS



Process	Burst time	Waiting Time	Turn around time
P_1	8	0-0=0	8+0=8
P_2	1	8-1=7	1+7=8
P_3	3	9-2=7	3+7=10
P_4	2	12-3=9	2+9=11
P_5	6	14-4=10	6+10=16.

1) Waiting Time = Turn around Time − Burst Time

or

Waiting Time = Response Time − Arrival.

(Non-preemptive Schedu Algo.)

2) Turn around Time = Time difference b/w completion time and arrival time

or

TAT = Burst Time + Waiting Time.

Date :

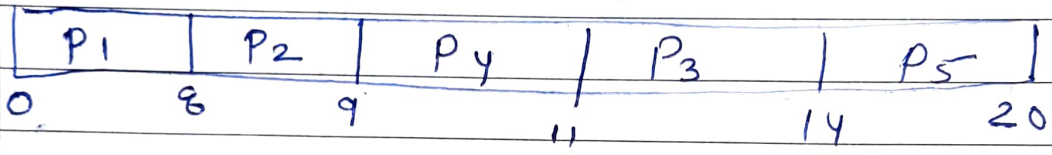
Avg Waiting Time = $\frac{\text{Total WT}}{\text{No. of process}}$

$= \frac{0+7+7+9+10}{5} = \frac{33}{5} = 6.6$

~~2~~ Avg TAT = $\frac{8+8+10+11+16}{5}$

$= \frac{53}{5} = 10.6$ seconds.

2) SJF (Non-preemtive)



Process	BT	WT	TAT
P_1	8	0-0=0	8+0=8
P_2	1	8-1=7	1+7=8
P_3	3	11-2=9	3+9=12
P_4	2	9-3=6	2+6=8
P_5	6	14-4=10	6+10=16

Avg WT = $\frac{32}{5}$ = 6.4

Avg TAT = $\frac{52}{5}$ = 10.4

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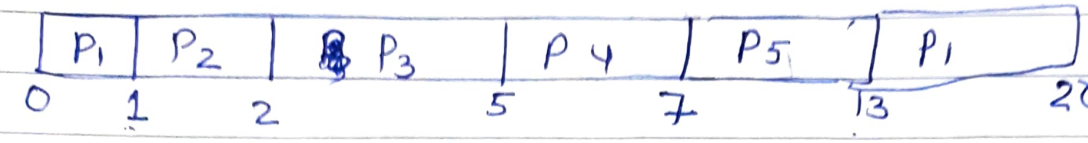
3) SJF (preemptive).



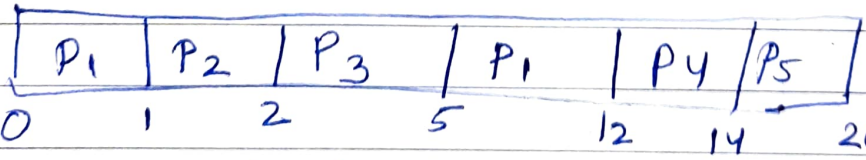
(In preemptive schedulling when process P_1 complete 1 second then another process P2 arrive at 1, so process P1 preemp and CPU allocate to P_2).

Process	BT	W.T	TAT
P_1	8	(0-0) + (13-1) = 12	8+12=20
P_2	1	1-1 = 0	1+0=1
P_3	3	2-2 = 0	3+0=3
P_4	2	5-3 = 2	2+2=4
P_5	6	7-4 = 3	6+3=9

Avg WT = $\frac{17}{5}$ = 3.4

Avg TAT = $\frac{37}{5}$ = 7.4.

4) Priority (Preemptive)



(P_1 and P_4 has same priority so u can select ~~any~~ process on ~~check~~ fcfs order.)

Date :

	BT	WT	TAT
P_1	8	$\frac{(0-0)+(5-1)}{4}$	8+4 = 12
P_2	1	1-1=0	1+0=1
P_3	3	2-2=0	3+0 3=3
P_4	2	12-3=9	2+9=11
P_5	6	14-4=10	6+10=16.

WT Avg = $\frac{23}{5}$ = 4.6

TAT Avg = $\frac{43}{5}$ = 8.6

or

Another way of solving all problem

(Priority Preemptive)

P_1	P_2	P_3	P_1	P_4	P_5

0 1 2 5 12 14 20

	BT	Priority	Turn around Time	WT
P_1	8	3	12-0=12	12-8=4
P_2	1	1	2-1=1	1-1=0
P_3	3	2	5-2=3	3-3=0
P_4	2	3	14-3=11	11-2=9
P_5	6	4	20-4=16	16-6=10

TAT = Completion Time — ~~Burst~~ Arrival Time.

WT = TAT — Burst time

Avg WT = $\frac{23}{5}$ = 4.6 TAT Avg = $\frac{43}{5}$ = 8.6

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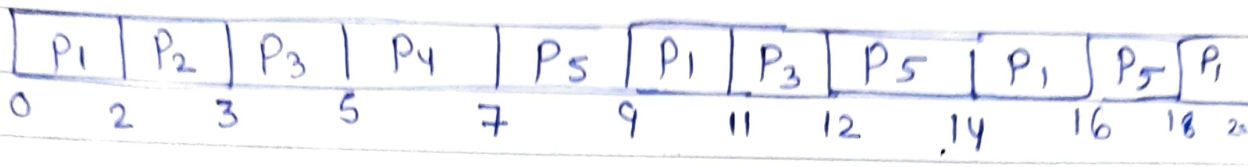
Round Robin (Time Quantum = 2)



Process	BT	WT	TAT
P_1	8	(0-0) + (9-2) + (14-11) + (18-16) = 0+7+3+2 = 12	8 + 12 = 20
P_2	1	2-1 = 1	1 + 1 = 2
P_3	3	(3-2) + (11-5) = 1+6 = 7	3 + 7 = 10
P_4	2	5-3 = 2	2 + 2 = 4
P_5	6	(7-4) + (12-9) + (16-14) = 3+3+2 = 8	6 + 8 = 14

Avg WT = $\frac{12+1+7+2+8}{5} = 6$

Avg TAT = $\frac{20+2+10+4+14}{5} = 10$

another Way

Process	BT	TAT	WT
P_1	8	20-0 = 20	20-8 = 12
P_2	1	3-1 = 2	2-1 = 1
P_3	3	12-2 = 10	10-3 = 7
P_4	2	7-3 = 4	4-2 = 2
P_5	6	18-4 = 14	14-6 = 8

TAT = Completion - Arrival

WT = TAT - Burst time