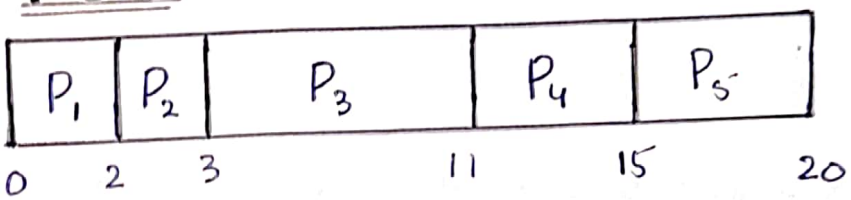
Name: Tazmeen Afzal
Roll No: 22P-9252
SECTION: BAI-5A
OPERATING SYSTEM
ASSIGNMENT # 4

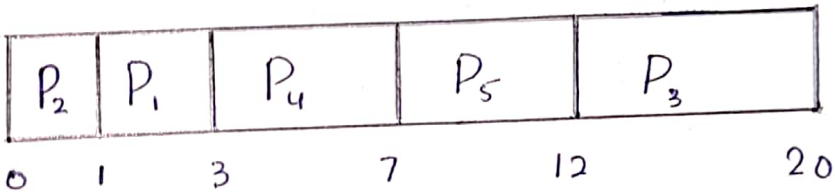
Task #1

a)

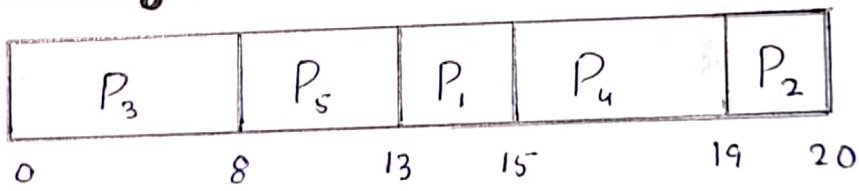
FCFS



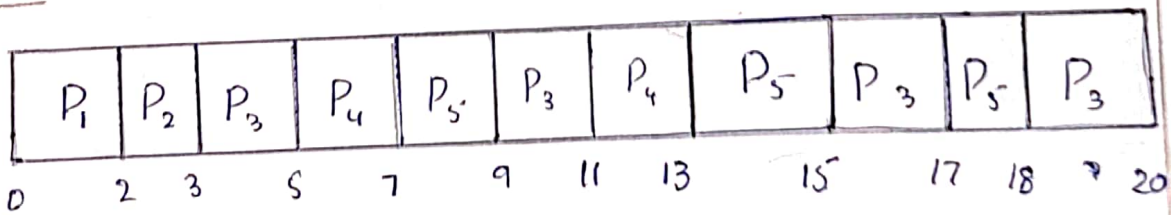
SJF



Priority



RR



b. Turnaround time = Completion time - Arrival Time

As there is no arrival time give so in this case we assume it as zero

	FCFS	SJF	Priority	RR
P_1	2	3	15	2
P_2	3	1	20	3
P_3	11	20	8	20
P_4	15	7	19	13
P_5	20	12	13	18

c. Waiting time = Turnaround time - Burst Time

	FCFS	SJF	Priority	RR
P_1	0	1	13	0
P_2	2	0	19	2
P_3	3	12	0	12
P_4	11	3	15	9
P_5	15	7	8	13

d. FCFS A.V.T = 6.2

SJF A.V.T = 4.6

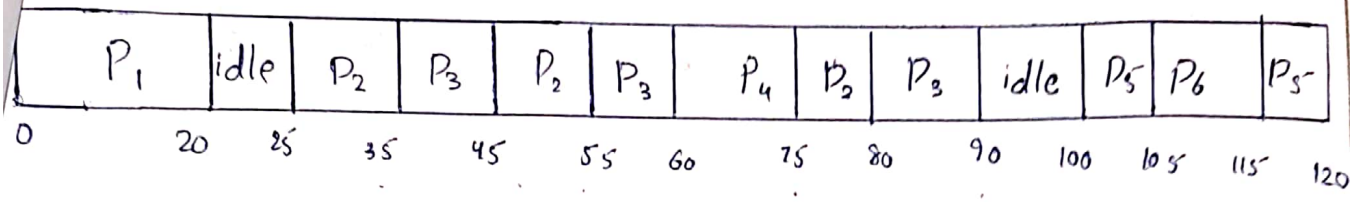
P A.V.T = 11

RR A.V.T = 7.2

SJF has shortest average waiting time over all the processes.

Task #2

a.



b. Turnaround time for each process

$$T.A = C.T - A.T$$

$P_1 = 20 - 0 = \boxed{20}$

$P_2 = 80 - 25 = \boxed{55}$

$P_3 = 90 - 30 = \boxed{60}$

$P_4 = 75 - 60 = \boxed{15}$

$P_5 = 120 - 100 = \boxed{20}$

$P_6 = 115 - 105 = \boxed{10}$

c. Waiting time :

$$W.T = T.A - B.T$$

$P_1 = 20 - 20 = \boxed{0}$

$P_2 = 55 - 25 = \boxed{30}$

$P_3 = 60 - 25 = \boxed{35}$

$P_4 = 15 - 15 = \boxed{0}$

$P_5 = 20 - 10 = \boxed{10}$

$P_6 = 10 - 10 = \boxed{0}$

d. CPU utilization rate:

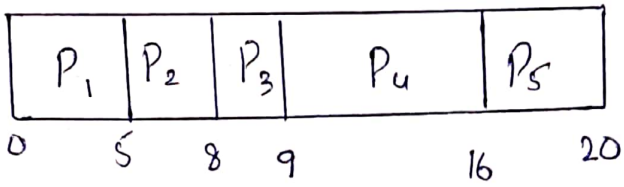
$$= \frac{\text{Total time CPU was active}}{\text{Total time elapsed}} \times 100$$

$$= \frac{120 - 15}{120} = \frac{105}{120} \times 100 = \boxed{87.5}$$

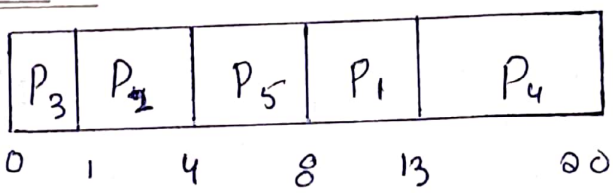
Task # 3

a.

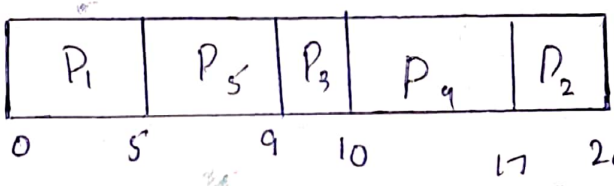
FCFS :



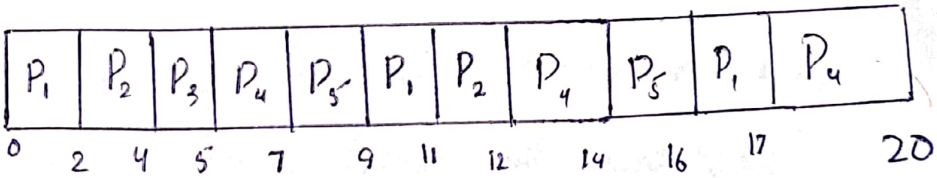
SJF :



Priority :



RR :



b. **Turn around time**

	FCFS	SJF	Priority	RR
P_1	5	13	5	17
P_2	8	4	20	12
P_3	9	1	10	5
P_4	16	20	17	20
P_5	20	8	9	16

c. Waiting Time :

	FCFS	SJF	Priority	RR
P_1	0	8	0	12
P_2	5	1	17	9
P_3	8	0	9	4
P_4	9	13	10	13
P_5	16	4	5	12

d.

FCFS avg time: 7.6

SJF avg time: 5.2

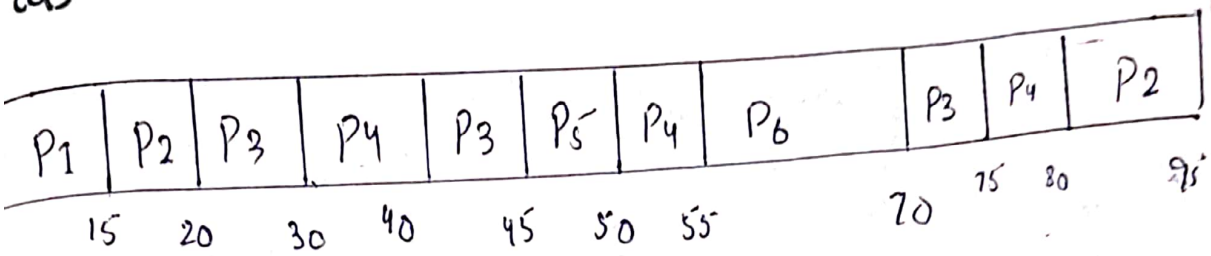
Priority avg time: 8.2

RR avg time : 10

SJF results in the minimum average waiting time (over all processes). ∴

Task # 4

(a)



(b)

T.A = Completion Time − Arrival Time

P_1	15 − 0	= 15
P_2	95 − 0	= 95
P_3	75 − 20	= 55
P_4	80 − 25	= 55
P_5	50 − 45	= 5
P_6	70 − 55	= 15

(c)

W.T = T.A − B.T

P_1	15 − 15	= 0
P_2	95 − 20	= 75
P_3	55 − 20	= 35
P_4	55 − 20	= 35
P_5	5 − 5	= 0
P_6	15 − 15	= 0