Name: Taimoor Manzoor
ID: SP-BSCS-0021
Sec: AM

Date _____

ANSWER #01
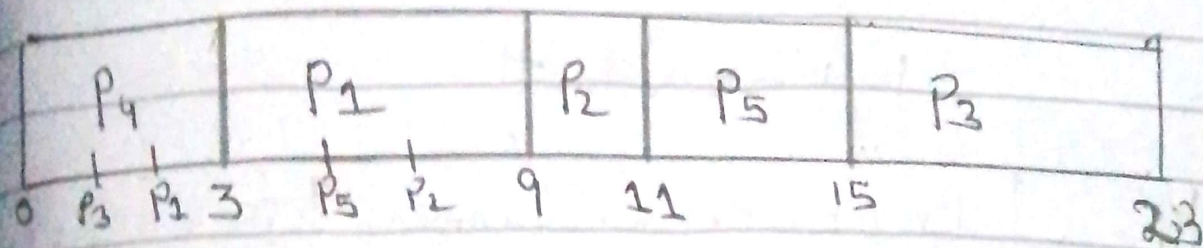
Process	Burst time	Arrival time	Complete time	TAT	WT
P₁	6	2	17	15	9
P₂	2	5	23	18	16
P₃	8	1	11	10	2
P₄	3	0	3	3	0
P₅	4	4	21	17	13

P₄	P₃	P₁	P₅	P₂

0   P₃ P₁ 3 P₅   P₂ 11   17   21   23

Avg wait = $\frac{40}{5}$ = 8.
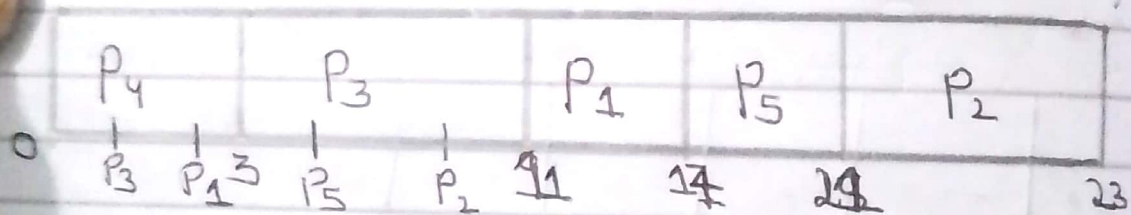
ANSWER #02

Process	Burst time	Arrival time	Complete time	TAT	WT
P₁	6	2	9	7	1
P₂	2	5	11	6	4
P₃	6	1	23	22	14
P₄	3	0	3	3	0
P₅	4	4	15	11	7

	P4	P1	P2	P5	P3

0 P3 P1 3 P5 P2 9   11   15   23

$$\text{Avg wait} = \frac{26}{5} = 5.2$$

ANSWER#03

Process	Burst time	Arrival time	Complete time	TAT	WT
P_1	6	1	10	9	3
P_2	8	1	25	24	16
P_3	7	2	17	15	8
P_4	3	3	6	3	0

Preemptive

$$\text{Avg wait} = \frac{27}{4} = 6.75$$

P2	P4	P1	P3	P2

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
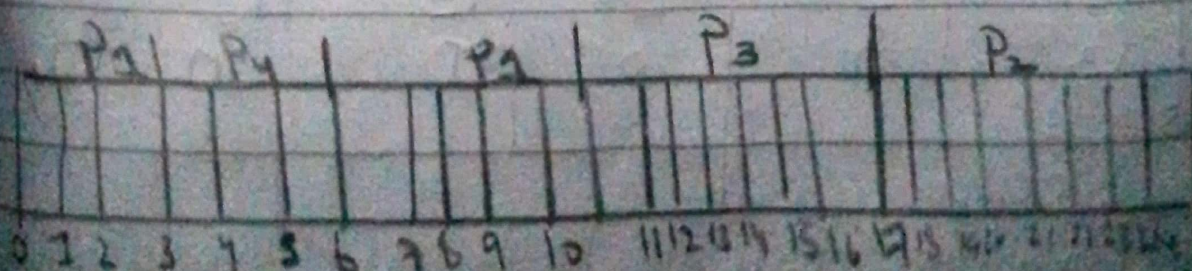
ANSWER #04

Process	Burst time	Arrival time	Complete time	TAT	WT
P_1	6	2	15	13	7
P_2	2	5	7	2	0
P_3	8	1	23	22	14
P_4	3	0	3	3	0
P_5	4	4	10	6	2

P₄ | P₃ | P₂ | P₅ | P₁ | P₃

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
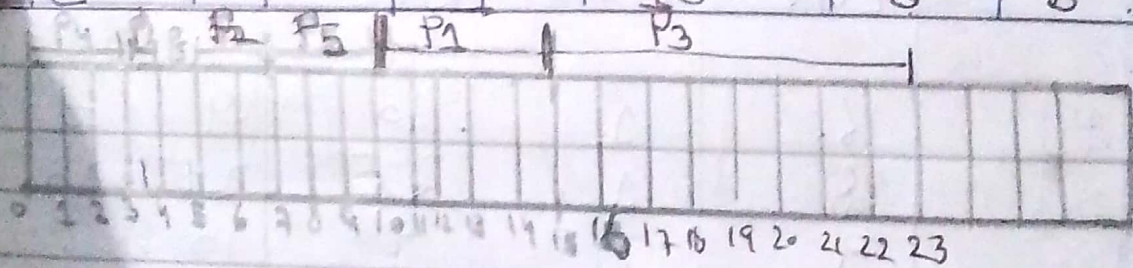
Avg wait = 23/5 => 4.6

ANSWER #05

Process	Burst time	Arrival time	Complete time	TAT	WT
P_1	10	0	23	23	13
P_2	5	0	13	13	8
P_3	8	0	20	20	12

Ready Queue

| P_2 | P_3 | P_1 | P_2 | P_3 | P_1 | P_2 | P_3 | P_1 | P_2 | P_3 | P_1 | P_2 | P_3 | P_1 |
| P_2 | P_3 | P_1 | P_3 | P_1 | P_3 | P_1 | P_3 | P_1 | P_1 | P_1 | P_1 | | | |

Running Queue:

P2	P3	P1	P2	P3	P1	P2	P3	P1	P2	P3	P1	P2	P3
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14

P1	P3	P1	P2	P1	P3	P1	P1	P1
14	15	16	17	18	19	20	21	22	23

$$\text{arg Wait} = \frac{33}{3} = 11.00$$

Time quantum = 1

ANSWER#06

Process	Burst time	Arrival time	Complete time	TAT	WT
P1	4	0	9	9	5
P2	3.	1	7	6	3
P3	5	4	12	8	3

Ready Queue:

P1	P2	P1	P2	P3	P1	P2	P4	P1	P4

P1	P2	P4	P2	P4	P1	P2	P4	P1	P4	P4	P4
0	1	2	3	4	5	6	7	8	9	10	11	12

$$\text{Arg wait} = \frac{11}{3} = 3.66$$

Time quantum = 1

ANSWER # 07

Process	Priority	Burst time	Arrival time	Complete time
P1	1	5	0	16
P2	3	3	1	5
P3	2	8	2	12

TAT	WT
16	11
4	0
10	2

P1	P2	P2	P2	P3	P3	P3	P3	P3	P3	P3	P1	P1	P1	P1	P1
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
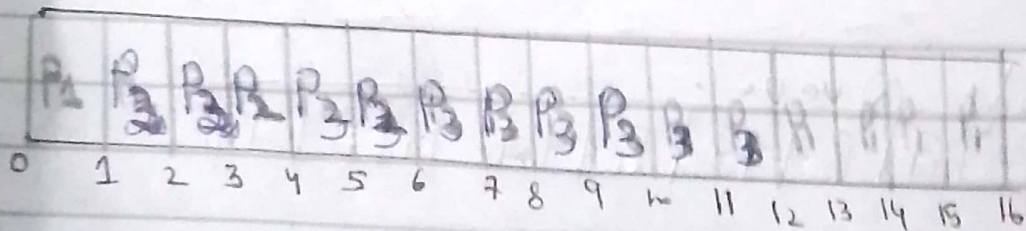
$$Avg\ wait = \frac{13}{3} = 4.33$$

higher the no higher priority

ANSWER # 08

Process	Priority	Burst time	Arrival time	Complete time
P₁	10	4	0	7
P₂	20	3	0	3
P₃	10	7	6	18
P₄	30	4	9	13

Turn Around time	Waiting time	
7	3	
3	0	
12	5	
4	0	

P₂	P₂	P₂	P₁	P₁	P₁	P₁	P₃	P₃	P₄	P₄	P₄	P₄	P₃	P₃	P₃	P₃	P₃
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

Avg wait $= \dfrac{8}{4} = 2$
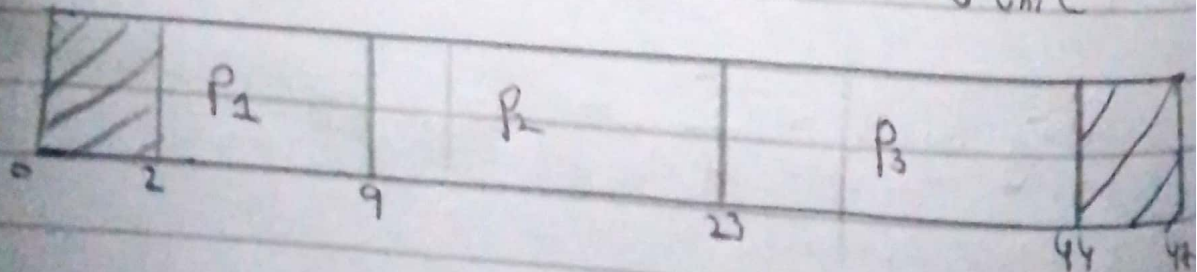
∴ highter the number higher the priority

ANSWER #09

Let Arrival time is $P_0 = P_1 = P_2 = 0$ $P_0, P_1, P_2 = 0$

P.No	Burst time	CPU Burst	I/O Burst	Arrival time
P1	10	2	7	1	0
P2	20	4	14	2	0
P3	30	6	21	3	0

Complete Time	Wait Time	TOT
109	1	9
23	3	23
44	14	44

$$\text{Avg wait} = (9 + 3 + 14) / 3 = 6 \text{ unit}$$

	P1	P2	P3	
0	2	9	23	44	4+

Here we are using the short remaining time algorithm

Answer #10

High Priority

[System process] → Queue 1

[Interactive Process] → Queue 2

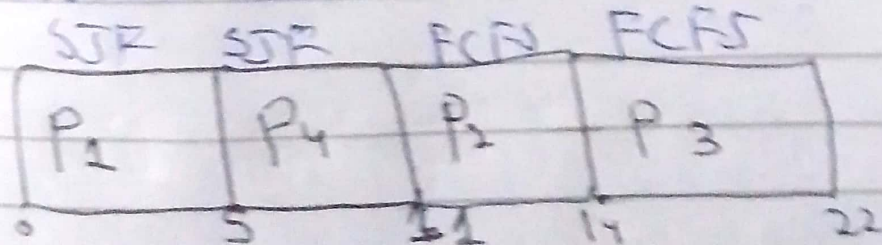[Batch Process] → Queue 3

Low priority

Priority of queue 1 is greater than queue.

Queue 1 using (Shortest Job First

Queue 2 using (FCFS)

Gantt chart

SJF	SJF	FCFS	FCFS
P_1	P_4	P_2	P_3

0   5   11   14   22

At starting Queue 1 will execute starting first because It has highest priority.