Q2)

FCFS

Patient	A·T	B·T	Priority	C·T	TAT	W·T
A	00:00	30min	3	00:30	30min	0
B	00:10	20min	5	00:50	20min	20min
C	00:15	40min	2	01:30	35min	5mn
D	00:20	15 min	4	01:45	70min	55 min
					155min	60min

Gantt chart

A	B	C	D

0   00:30   00:50   01:30   01:45
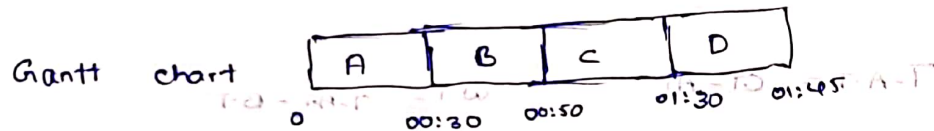
$$TAT = CT - AT$$

$$WT = TAT - BT$$

$$Avg\ TAT = \frac{155min}{4}$$

$$= 38.75\ min$$

$$Avg\ WT = \frac{60min}{4}$$

$$= 15\ min$$

SJF

Patient	A·T	B·T	Priority	C·T	T·AT	W·T
A	00:00	30min	3	00:30	30min	0
B	00:10	20min	5	01:05	55min	35min
C	00:15	40min	2	01:45	90min	50min
D	00:20	15min	4	00:45	25min	10min
					200min	95min

Gantt chart

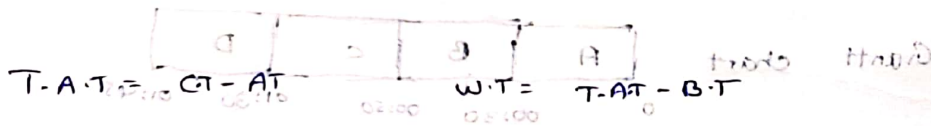| A	D	B	C

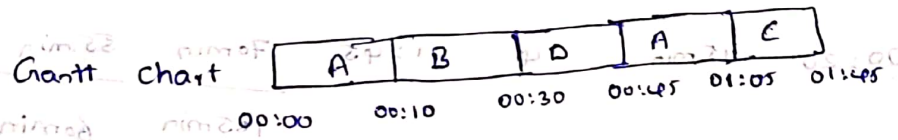00:00   00:30   00:45   01:05   01:45
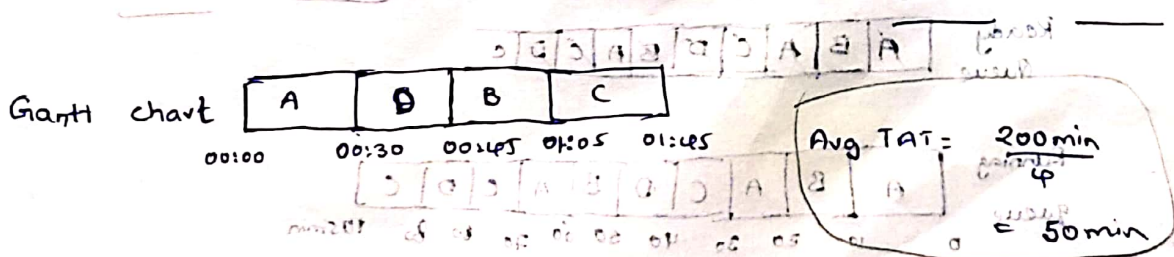
$$Avg\ TAT = \frac{200min}{4}$$

$$= 50min$$

$$Avg\ WT = \frac{95min}{4} = 23.75\ min$$

Priority Scheduling (Assuming higher priority is higher number)

Patient	A·T	B·T	Priority	C·T	T·A·T	W·T
A	00:00	30 min	3	01:05	65 min	35 min
B	00:10	20 min	5	00:30	20 min	0
C	00:15	40 min	2	01:45	90 min	50 min
D	00:20	15 min	4	00:45	25 min	10 min
					200 min	95 min

Gantt chart

A	B	D	A	C
00:00   00:10   00:30   00:45   01:05   01:45

T·A·T = CT – AT   W·T = T·AT – B·T

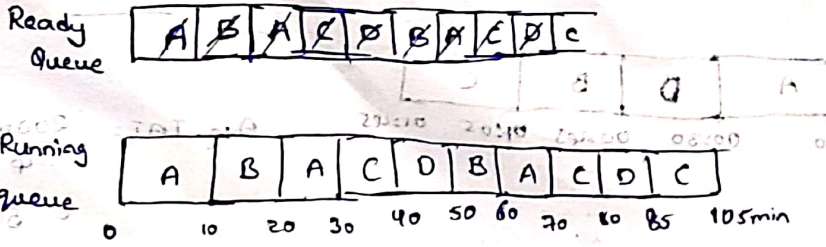| | | D | | | | B | |

average waiting time (W.T)

$$= \frac{95 \text{ min}}{4} = 23.75 \text{ min}$$

average turn-around-time (T·A·T)

$$= \frac{200 \text{ min}}{4} = 50 \text{ min}$$

Round – Robin (Assuming time quantum = 10 min)

Patient	A·T	B·T	Priority	C·T	T·A·T	W·T
A	00:00	20 10 0 / 30 min	3	01:10	70 min	40 min
B	00:10	15 0 / 20 min	5	01:00	50 min	30 min
C	00:15	35 25 20 10 / 40 min	2	01:45	90 min	50 min
D	00:20	10 5 0 / 15 min	4	01:25	65 min	50 min
					275 min	170 min

Ready Queue

A	B	A	C	D	B	A	C	D	C

| | | | D | | A | |

Running queue

A	B	A	C	D	B	A	C	D	C
0   10   20   30   40 50 60 70   80 85   105 min

average W.T $= \dfrac{170 \text{min}}{4} = 42.5 \text{min}$

average T.A.T $= \dfrac{275 \text{min}}{4} = 68.75 \text{min}$

According to average waiting time & turn-around time,

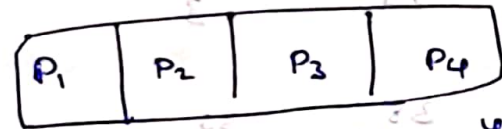First come first serve is best algorithm and more

Suitable algorithm.

Q1A)

FCFS

Process	A·T	B·T	Priority	C·T	T-A·T	W·T
P1	0	24	3	24	24	0
P2	4	3	1	27	23	20
P3	5	3	4	30	25	22
(P4)	6	12	2	42	36	24
					$\overline{108}$	$\overline{66}$

P1	P2	P3	P4

0   24   27   30   42

T·A·T = C·T − A·T

W·T = T·A·T − B·T

Avg·T·A·T = $\frac{108}{4}$ = 27

Avg W·T = $\frac{66}{4}$ = 16·5

S.J.F

Process	A.T	B.T	C.T	T.A.T	W.T
P_1	0	24	24	24	0
P_2	4	3	27	23	20
P_3	5	3	30	25	22
P_4	6	12	42	36	24
				108	66

P_1	P_2	P_3	P_4

0   24   27   36   42
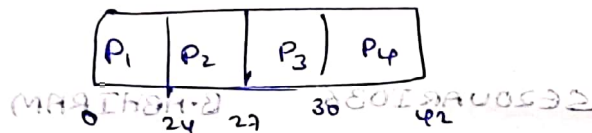
$$Avg \ T\cdot A\cdot T = \frac{108}{4} = 27$$

$$Avg \cdot W\cdot T = \frac{66}{4} = 16.5$$

P.S (Priority scheduling) (Assuming high priority as high number)
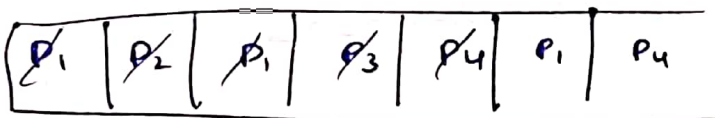
Process	A.T	B.T	Priority	C.T	T.A.T	W.T
P_1	0	24	3	27	27	3
P_2	4	3	1	42	38	35
P_3	5	3	3	8	3	0
P_4	6	12	2	39	33	21
					101	59

P_1	P_3	P_1	P_4	P_2

0   5   8   27   39   42
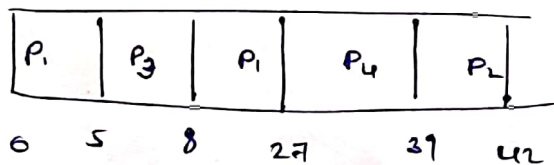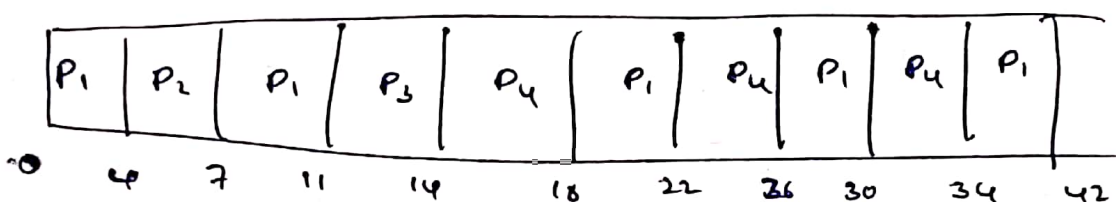
$$Avg. \ T\cdot A\cdot T = \frac{101}{4} = 25.25 \qquad Avg \ W\cdot T = \frac{59}{4} = 14.75$$

Round - Robin

Process	A.T	B.T	C.T	T.A.T	W.T
P₁	0	24	42	42	18
P₂	4	3	7	3	0
P₃	5	3	14	9	6
P₄	6	12	34	28	16
				82	40

Ready queue ⟹

P₁	P₂	P₁	P₃	P₄	P₁	P₄

Running queue: ⟹

P₁	P₂	P₁	P₃	P₄	P₁	P₄	P₁	P₄	P₁

0   4   7   11   14   18   22   26   30   34   42

$$\text{Avg } T\text{-}AT = \frac{82}{4} = 20.5 \qquad ; \qquad \text{avg } W\text{-}T = \frac{40}{4} = 10$$

according to the avg w.T & T-AT, Rand Robin

is best algorithm and more suitable —Algorithm.