Round Robin Scheduling (preemtive scheduling strategies).

- preemtive means while one process(p1) is executing it can be interuupted and another process can be scheduled or provided the cpu time.

- in round robin a specific piece of time is allocated called quantum for each process to execute, if the process completes execution within that quantum it terminates otherwise it is placed in the end of queue again.

Process	Burst Time	Arrival Time
P1	4 ms	0 ms
P2	5 ms	0 ms
P3	3 ms	0 ms

In this problem let's suppose time quantum is 2 ms.

All three process arrives at same time and allocated time quantum is 2ms.

- from time t=0 to t=2 (because time quantum is 2ms so each process gets 2ms no matter if process completes or not as per round robin) p1 exectures, from 4ms of burst time, 2ms it runs so remaining time for p1 = 2ms.

- from time t=2, to t=4, p2 executes, out of 5ms of burst time since it executes 2ms so for p2 time left is (3ms)

- from time t=4 to t=6, p3 executes out of 3ms of burst time 2ms already completed so remaninign time is 1ms for p3.

Process	Burst Time	Arrival Time
P1	4 ms	0 ms
P2	5 ms	0 ms
P3	3 ms	0 ms

Now a ready queue is like:
Time quantum = 2ms
At t = 0
[[P1] [P2] [P3] [ ] [ ]]

Now at t=2

Gantt chart;

[P1] [ ] [ ] [ ]
0 2 time left for P1 = 2ms

[[~~P1~~] [P2] [P3] [P1] [ ]] Ready queue

At t= 4
Gantt chart;

| P1 | P2 | | | | time left = 3ms
0 2 4

[[~~P1~~] [~~P2~~] [P3] [P1] [P2]] Ready queue

At t = 6

Gantt chart;

| P1 | P2 | P3 | | | time left = 1ms
0 2 4 6 8

[[~~P1~~] [~~P2~~] [~~P3~~] [P1] [P2] [P3]] Ready queue

At t = 8

Gantt chart;

| P1 | P2 | P3 | P1 | | time left = 0ms p1 completed it's execution so it is terminated
0 2 4 6 8

[[~~P1~~] [~~P2~~] [~~P3~~] [~~P1~~] [P2] [P3]] Ready queue

At t = 10
Gantt chart;

| P1 | P2 | P3 | P1 | P2 | | time left = 1ms for P2
0 2 4 6 8 10

[[~~P1~~] [~~P2~~] [~~P3~~] [~~P1~~] [~~P2~~] [P3] [P2]] Ready queue

Now since P3 have only 1ms left so

At t = 11
Gantt chart;

| P1 | P2 | P3 | P1 | P2 | P3 | time left = 0ms for P3, so P3 completed it's execution
0 2 4 6 8 10 11

[[~~P1~~] [~~P2~~] [~~P3~~] [~~P1~~] [~~P2~~] [~~P3~~] [P2]] Ready queue

Now process P1 and P3 completed its execution and only P2 have 1ms left so

At t= 12

Gantt chart;

| P1 | P2 | P3 | P1 | P2 | P3 | P2 | time left = 0ms for P3, so P3 completed it's execution
0 2 4 6 8 10 11 12

[[~~P1~~] [~~P2~~] [~~P3~~] [~~P1~~] [~~P2~~] [~~P3~~] [~~P2~~]] Ready queue

Now,
Because p1 ends or completed execution at 8 so CT = 8, P2 completed at 12 so CT=12, and P3 completed at 11 so CT=11

Processes	AT	BT	CT	TAT	WT
P1	0	4	8	8-0=8	8-4=4
P2	0	5	12	12-0=12	12-5=7
P3	0	3	11	11-0=11	11-3=8

So average TAT = 8+12+11/3 = 31/3 = 10.33ms

Average WT = 4+7+8/3 = 19/3 = 6.33ms