Worksheet 6.1: Basic CPU Scheduling

(a) Schedule the following input using **Preemptive Priority Scheduling**. Assume that a smaller number indicates higher priority. First give the output in the form of a **Gantt chart**, and then compute the **average waiting time**. Show your work.

Process	Arrival Time	CPU Burst	Priority
P_1	0	5	3
P_2	1	3	4
P_3	3	2	1
P_4	6	4	2

.
Gantt Chart:

Time:	0	3	5	6	10	11
Process:	P_1	P_3	P_1	P_4	P_1	P_2

P_1 waiting time = 2+4 = 6

P_2 waiting time = 11-1 = 10

P_3 waiting time = 3-3 = 0

P_4 waiting time = 6-6 = 0

Average waiting time = (6+10) / 4 = 4

(b) Schedule the following input using **Round Robin Scheduling** with a time quantum of **5**. Assume that all processes arrive at time 0 but assign time quanta in the given order (P_1, P_2, P_3, P_4). First give the output in the form of a **Gantt chart**, and then compute the **average waiting time**. Show your work.

Process	CPU Burst
P_1	8
P_2	3
P_3	12
P_4	6

Gantt Chart:

Time:	0	5	8	13	18	21	26	27
Process:	P_1	P_2	P_3	P_4	P_1	P_3	P_4	P_3

P_1 waiting time = 18-5 = 13

P_2 waiting time = 5

P_3 waiting time = 8 + (21-13) + 1 = 8 + 8 + 1 =17

P_4 waiting time = 13 + 26 – 18 = 13 + 8 = 21

Average waiting time = (13 + 5 + 17 + 21) / 4 = 56/4 = 14