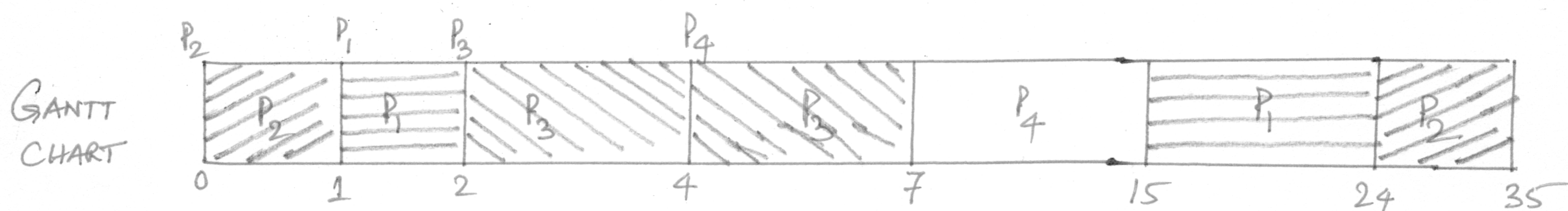


4. (a) Pre-emptive Shortest Job First Scheduling

Process	Arrival Time	Burst Time	Priority	Completion Time	Turn Around Time	Waiting Time	Response Time
P ₁	1	10	4	24	23	13	0
P ₂	0	12	3	35	35	23	0
P ₃	2	5	2	7	5	0	0
P ₄	4	8	1	15	11	2	3



READY QUEUE

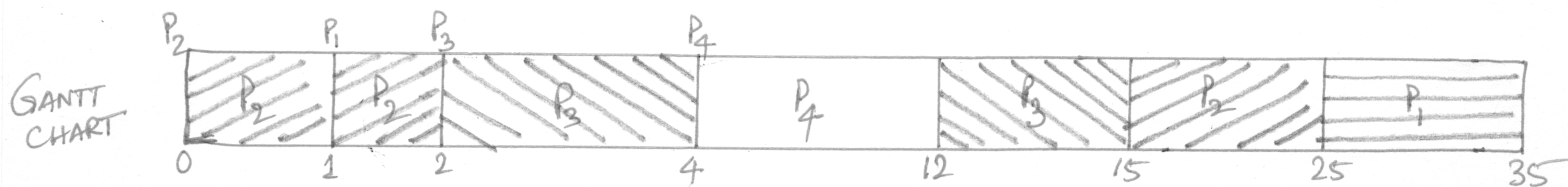
	P ₂	P ₁ , P ₂	P ₁ , P ₂ , P ₄	P ₁ , P ₂ , P₃	P₃ , P ₂	
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$$\text{Average Waiting Time (AVG}_{WT}) = \frac{13+23+0+2}{4} = \frac{38}{4} = 9.5$$

$$\text{Average Response Time (AVG}_{RT}) = \frac{0+0+0+3}{4} = \frac{3}{4} = 0.75$$

(b) Pre-emptive Priority Scheduling

Process	Arrival Time	Burst Time	Priority	Completion Time	Turn Around Time	Waiting Time	Response Time
P ₁	1	10	4				
P ₂	0	12	3				
P ₃	2	5	2				
P ₄	4	8	1				



READY QUEUE

	P ₁	P ₁ , P ₂	P ₁ , P ₂ , P ₃	P ₁ , P ₂	P ₁	
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$$\text{Average Waiting Time (AVG}_{WT}) = \frac{24+25+11+4}{4} = \frac{64}{4} = 16$$

$$\text{Average Response Time (AVG}_{RT}) = \frac{24+0+0+0}{4} = \frac{24}{4} = 6$$