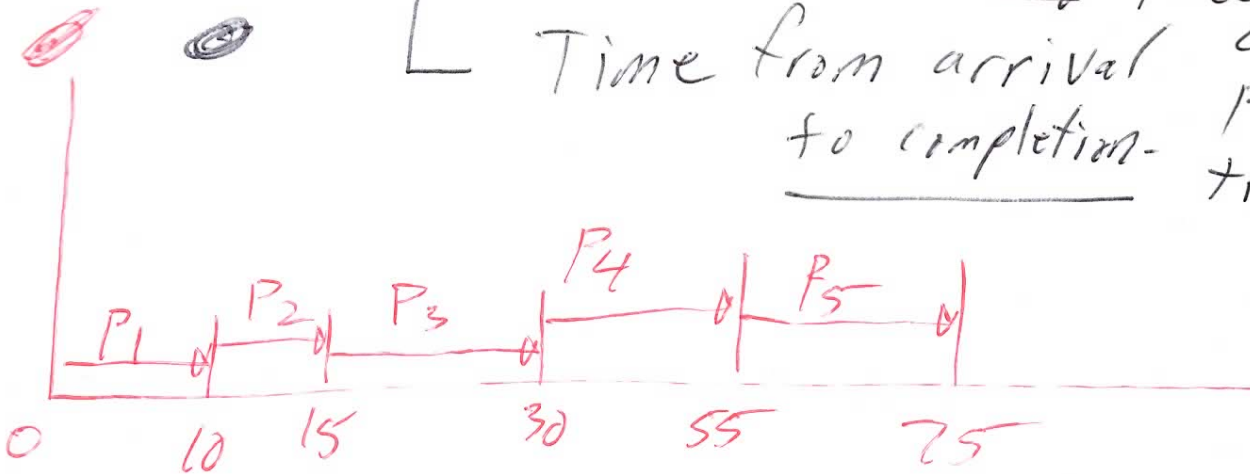


Problem P1: Processes P1 through P5 have the characteristics given below. What is the average wait time? What is the average turnaround time? What is the throughput?

Process	Execution Time <i>ms</i>
P1	10
P2	5
P3	15
P4	25
P5	20



Time from arrival to completion - *Processes completed per unit time*

Length of queue

$$\bar{W} = \frac{0 + 10 + 15 + 30 + 55}{5} \Rightarrow \frac{110}{5} \Rightarrow 22 \text{ms}$$

$$\bar{T} = \frac{10 + 15 + 30 + 55 + 75}{5} = \frac{185}{5} \Rightarrow 37 \text{ms}$$

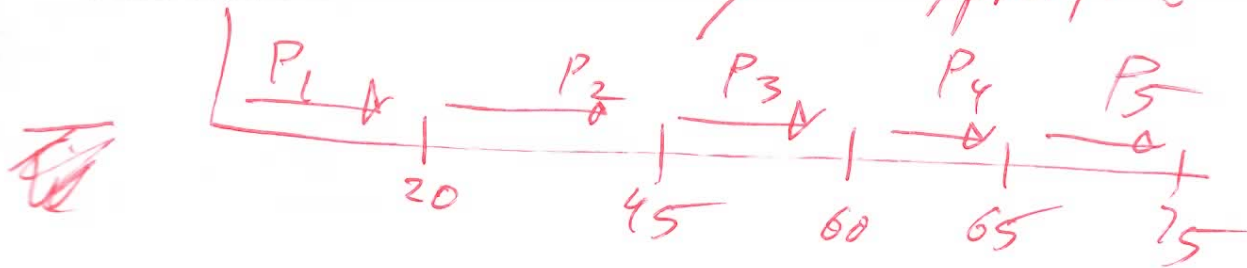
Throughput $\Rightarrow \frac{5}{75} \Rightarrow \frac{1}{15}$

Throughput in seconds

$$\frac{5}{0.075} \Rightarrow 66 \text{ processes / second}$$

Problem P2: Processes P1 through P5 have the characteristics given below. What is the average wait time? What is the average turnaround time? What is the throughput?

Process	Execution Time
P1	20
P2	25
P3	15
P4	5
P5	10



$$\bar{W} = \frac{0 + 20 + 45 + 60 + 65}{5} \Rightarrow \frac{190}{5} \Rightarrow 38 \text{ms}$$

$$\bar{T} = \frac{20 + 45 + 60 + 65 + 75}{5} \Rightarrow \frac{265}{5} \Rightarrow 53 \text{ms}$$

$$\bar{T} = \bar{W} + \text{Average execution Length}$$

$$\bar{T} = 38 + \frac{20 + 25 + 15 + 5 + 10}{5}$$

$$\text{Throughput} = \frac{5}{75} \Rightarrow \frac{1}{15} \quad \frac{75}{5} \Rightarrow 15$$