

Home Work 2

Question 2

The machine in Question 1 experiences breakdown from time; $t = 6$. It is repaired and, machine starts working again at time; $t = 9$. During this time, Server is idle. Modify the following Table to accommodate machine breakdowns. Find; values of $P, N, \sum WT, WT^*, \sum TS, TS^*, \int Q, Q^*, \int B$. Show, (i) Waiting Time Graph, (ii) Process Graph

Time; t	Part#	Event	N	WQ	WQ*	$\sum WQ$	Q*	$\int Q$	P	TS	TS*	$\sum TS$	$\int B$
0	1	ARR											
2	2	ARR											
3	3	ARR											
4	1	DEP											
5	4	ARR											
6	**	Machine DOWN											
9	**	MACHINE WORKING AGAIN											
?	?	?											
?	?	?											
?	?	?											
?	?	?											
13*	---	End of SIMULATION											

Also find ; Average waiting time (AWQ);
Average Time-in-System (ATS)

$$\text{Time-average Length of the Queue} = \frac{\int Q}{t}$$

$$\text{Server Utilization} = \frac{\int B}{t}$$

$$\text{Service Level} = \frac{\text{Total_out} \times 100}{\text{Total_In}}$$

$$\text{Throughput Rate} = \frac{\text{Total_out}}{t}$$