

1-What kind of problems are with simulation? (10%)

2-What is state of a system? Give an example. (10%)

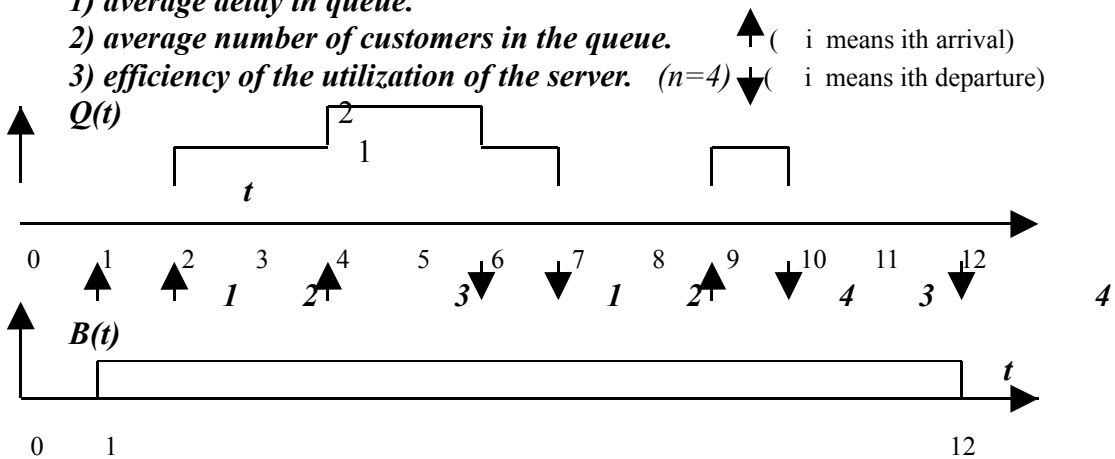
3- Classify simulation models into three different dimensions. (10%)

4-In the following single server queuing system, find: (30%)

1) average delay in queue.

2) average number of customers in the queue.

3) efficiency of the utilization of the server. ($n=4$)



5- Suppose that X and Y are jointly continuous random variables with joint p.d.f. as follows:

$$f(x,y)=24xy \text{ for } x, y \geq 0 \text{ and } x+y=1$$

$$f(x,y)=0 \text{ otherwise}$$

Find marginal distribution of $f(x)$ and $f(y)$ and conclude whether X, Y are independent or not. (20%)

6-If $y=\exp(-x)$ and x is a random variable with the exponential p.d.f $f(x)=\exp(-x)$, then find the probability density function (p.d.f) of random variable, $f(y)$. (20%)
