

Simulation
3-rd Year Undergraduate
Mid-Term Examination
1998-12-17 time: 90 minutes

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1-In a single server, what are the “state variables” and “events”? (15%)

2-Classify simulation models into three different dimensions. (15%)

3-What are the three measures of the system performance in a single server queueing system? (15%)

4-In the following single server queueing system, find: 1) average delay in queue.
2) average number of customers in the queuer. 3) efficiency of the utilization of the server. (15%)

5-In Buffon needle problem, if the length of the needle is l and distance between the parallel lines is d , the probability of crossing in one direction angle say, θ , is:
 $p = l \sin \theta / d$, if we want to find the whole probability we should integral it over all range of θ , derive this probability by using the mentioned method. (15%)

6- If X is a random variable with exponential distributions as follows:

$$f_X(x) = e^{-x}$$

What is the distribution of Y , where: $Y=aX$ (15%)

7-What is “iconic model”? Give an example for it. (10%)
