KFUPM | Term 121 | Date: 7/11/2012

Mathematics & Statistics | STAT 319 | Duration: 25 minutes

Quiz# 2

Name: ID #: Section 4 Serial #:

Q1.The function of the random variable is given by $f(x) = \begin{cases} (1-x) & for\ 0 < x < 1 \\ 0 & otherwise \end{cases}$

a. Is *f*(*x*) is a probability density function? If not make it.

b. Find the probability that the value of the random variable between 0.2 and 2.

c. Find the mean of the random variable.

Q2. The weekly amount spent for maintenance and repairs in a certain company follows a normal distribution with a mean of $400 and a standard deviation of $20. If $450 is budgeted to cover repairs for next week,

a. What is the probability that the actual costs will exceed the budgeted amount?

b. What is the weekly maintenance and repair amount that is exceeded by 75% of all weekly amounts?

P.T.O. ➔

Q*3**. An engineer designed a modified welding robot. The robot will be considered ***good enough to manufacture if it misses only 1% of its welds, and it will be judged a ***poor performer*** if it misses 5% of its welds. (In-between possibilities are not considered.) A test is performed involving **10** welds. The new design will be accepted if the number of missed welds is 2 or fewer and rejected otherwise.

a. What is the probability that a ***good design*** will be rejected?

b. What is the probability that a ***poor design*** will be accepted?

c. If we test **90** welds, approximate the probability that a poor design will be rejected.

***Q*4**. The lifetime (in hours) of the central processing unit of a certain type of microcomputer is an exponential random variable with a mean of 1000 hours.

a. What is the probability that a central processing unit will have a lifetime of at least 2000 hours?

b. What is the lifetime of a central processing unit that exceeds 20% of all units?

With My Best Wishes