

**(101) Math 131-05:Finite Mathematics QuizTest-Sis(9.1-2): January 12, 2011**

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**Contents**

**Marks: 20; Time: 20 Minutes**

**NAME:.....**

**ID#.....**

**NOTE: SHOW COMPLETE SOLUTION.**

Q.1.(Marks : 2 + 2 + 2). A box of 10 eggs contains 3 defective eggs. A random sample of 2 is selected and tested.

Let  $X$  be the random variable associated with the number of defective eggs in the sample.

Find the probability distribution of  $X$ .

Complete the following table.

| $X = x$ | $f(x) = P(X = x)$ |  |  |
|---------|-------------------|--|--|
| $X = 0$ |                   |  |  |
| $X = 1$ |                   |  |  |
| $X = 2$ |                   |  |  |
|         |                   |  |  |

Q.2. (Marks : 1 + 1 + 1 + 2 + 1).(427TB18) The following table for a small car rental company gives the probability that  $x$  cars are rented daily.

| $X = x$ | $p(x) = P(X = x)$ |  |
|---------|-------------------|--|
| 1       | 0.15              |  |
| 2       | 0.10              |  |
| 3       | 0.20              |  |
| 4       | 0.25              |  |
| 5       | 0.20              |  |
| 6       | 0.10              |  |

(a). What is the expected value of  $X$ .

$\mu = E(X) =$  .....

(b). What is the expected value of  $X$ .

$E(X^2) =$  .....

(c). What is the variance of  $X$ .

$\sigma^2 = Var(X) =$  .....

(d)  $P(2X + 1 \leq 7) =$  .....

(e)  $P(2X + 1 \geq 9) =$  .....

**BINOMIAL DISTRIBUTION:**

$[ X \sim Bin(n, p) . (q = 1 - p) .$

$$f(x) = P(X = x) = \binom{n}{x} p^x q^{n-x} = nC_x p^x (1 - p)^{n-x},$$

where,  $x = 0, 1, 2, 3, \dots, n. ]$

Q.3. (Marks: 2+2+2+2). 437SM3E. Baseball. A base pitcher gives up a hit on the average of once every fifth pitch. If nine pitches are thrown, what is the probability that:

(a) Exactly three pitches result in hits?

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Probability:.....

(b) No pitch results in a hit?

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Probability:.....

(c) Eight or more pitches result in hits?

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Probability : .....

(d) No more than seven pitches result in hits?

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Probability:.....