

MATH 131-03 QUIZTEST V (072FEB16-JUN21,2008)CH.9: 9.1-9.2.B

Dr. Raja Mohammad Latif Time: Fifteen Minutes , Marks: 30, June 04, 2008.

Name: _____, I.D.# _____

NOTE: 1. The questions are not in any order of difficulty at all.

2. Please provide complete solution for all the problems for full credit.

3. Only nonprogramable calculators are allowed.

4. Any type of mobiles or pagers are not allowed during the examination.

5. Please count that you have exactly 2 questions.

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$X \sim \text{Bin}(n, p) : f(x) = P(X = x) = \binom{n}{x} p^x q^{n-x}, x = 0, 1, 2, 3, \dots, n; (q = 1 - p);$
 Expected Value of $X := E(X) = \mu = np$
 Variance of $X : \text{Var}(X) = \sigma^2 = npq.$

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Q.1. 493T10.3B26. (Marks : 3 + 3 + 3 + 6 = 15).
(Quality Control) In a production process, the probability of a defective unit is 0.15.

Suppose a sample of 12 units is selected at random.

Let X be the number of defectives.

(a) Use the Binomial Distribution to answer the following questions:

(i). Find the expected number of defective units.

$\mu = E(X) =$ _____

(ii). Find the variance $\text{Var}(X)$.

$\text{Var}(X) = \sigma^2 =$ _____.

(iii) Find the Probability that

$P(X = 7) =$ _____

(iii) Find the Probability that

$P(3 < 5 \leq 6) :$ _____

Q.2. 484TAN. (Marks : 5 × 3 = 15)

(Expected) Demand) The owner of a new stand in a college community estimates the weakly demand for a certain magazine as follows:

Let $X =$ the number of Magazines demanded weakly.

$X = x$	30	40	60	80	90	100
$P(X = x)$	0.05	0.25	0.15	0.20	0.30	0.05

Answer the following questions:

(a) Find the number of issues of the magazine that the newsstand owner can expect to sell per week.

$\mu = E(X) =$ _____

(b) Find the expected value of X^2 .

$E(X^2) =$ _____.

(c) What is the probability that between 65 and 85 magazines will be sold weakly?

$\Pr(65 < X < 85) =$ _____

(d) What is the probability that between 45 and 55 magazines will be sold weakly?

$\Pr(45 < X < 55) =$ _____

(e) What is the probability that between 35 and 85 magazines will be sold weakly?

$\Pr(35 < X < 85) =$ _____