

(083) Math 131:Finite Mathematics QuizTest-Four(9.1-2): August 29, 2009

Dr. Latif and Dr. Raja Latif and Dr. Muhammad Latif and Dr. Abdul Latif

Contents

Marks: 15; Time: 15 Minutes

NAME:.....

I.D.#:

--	--	--	--	--	--

SERIAL# SECTION #: (check: Sec.02B)

02	B	9 : 20 am	10 : 30 am	
		Sec : 02	Sec : 01	

NOTE: SHOW ALL STEPS OF THE SOLUTION.

NO CREDIT FOR ANSWERS WITHOUT COMPLETE SOLUTION.

The questions are not in any order of difficulty at all. Only the nonprogramable calculators are allowed.

Write the simplified answer of each question at the end of each question.

=====

Q.1. (Marks : 5). A carton of 20 calculator batteries contains 2 dead ones.

A random sample of 3 is selected and tested.

Let X be the random variable associated with the number of dead batteries found in a 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 : 5). Suppose that the probability distribution for the random variable X is given in the following table.

$X = x$	$p(x) = P(X = x)$		
-2	0.10		
-1	0.20		
0	0.40		
1	0.20		
2	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) $P(2X + 1 < 3) =$ _____

(e) $P(X + 1 \geq 0) =$ _____

BINOMIAL DISTRIBUTION:

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

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

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

Q.3. (Marks : 3 + 1 + 1). Testing. A multiple choice test is given with 4 choices (only one is correct) for each of 10 questions.

(a) What is the probability of passing the test with a grade of 60 % or better just by guessing?

(Hint : Let X be the number of correct answers. Then $X \sim Bin(n, p)$).

$P(X \geq 6) =$ _____

(b) What is expected value $\mu = E(X)$ of X .

$\mu = E(X) =$ _____

(c) What is the variance $\sigma^2 = Var(X)$.

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