

**(101) Math 131-03:Finite Mathematics QuizTest-Sis(9.1-2): January 12, 2011**

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

**Contents**

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

**NAME:**.....

**ID#**-----

**NOTE: SHOW COMPLETE SOLUTION.**

Q.1.(Marks : 5). A bag contains three red and two white marbles. Two marbles are randomly withdrawn in succession without replacement. Let  $X$  = the number of red marbles withdrawn.

Find the distribution  $f$  for  $X$ .

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

Q.2. (Marks : 1 + 1 + 1 + 1 + 1). Suppose that a die is not fair and we obtain (empirically) the following probability distribution for  $X$ .

$X = x$	$p(x) = P(X = x)$	
1	0.24	
2	0.13	
3	0.18	
4	0.20	
5	0.11	
6	0.14	

(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)  $P(2X + 1 < 7) =$  \_\_\_\_\_

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

=====

**BINOMIAL DISTRIBUTION:**

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

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

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

Q.3. (Marks : 2 + 3 + 2 + 3). (441SM40). Working habits. If 30 % of the workers at a large factory bring their lunch each day, what is the probability that in a randomly selected sample of 8 workers

(a) Exactly 2 bring their lunch each day?

.  
. .  
. .  
. .  
. .

Probability:-----

(b) At least 2 bring their lunch each day?

.  
. .  
. .  
. .  
. .  
. .

Probability:-----

(c) No one brings lunch?

.  
. .  
. .  
. .  
. .  
. .

Probability:-----

(d) No more than three 3 bring lunch each day?

.  
. .  
. .  
. .  
. .  
. .

Probability:-----