National University of Computer and Emerging Sciences, Lahore Campus

Course:	Probability &Statistics	Course Code:	MT206
Program:	BS Computer Science	Semester:	Fall-17
Duration:	1 hour	Total Marks:	30
Paper Date:	3/11/17	Weight	15%
Section:	All	Page(s):	02
Exam:	Mid-2	Roll No:	

Instruction/Notes: Exchange of calculators and stationary is strictly prohibited. Attempt parts of same question together. If you think some information is missing or wrong make assumptions and clearly state them.

Question 1: (4 marks) If x is a continuous random variable with the density

$$f(x)=\begin{cases} x/8, & 0\le x\le 4 \\ 0, & otherwise \end{cases}$$

i) Find the distribution function F(x)

ii) Find P(2<x<3) using the distribution function

$\sum_{i\le x} f(x)$

Question 2: (10 marks) Let X and Y be two discrete random variables with the following joint probability function

y \ x	1	2	3
1	0.03	0.04	0.03
2	0.15	0.20	0.15
3	0.12	0.16	0.12

$\int_y f(x,y)\,dy$

Find the following

i) E(XY)

ii) Var (3X-Y)

iii) P(Y=y / X=2) $\frac{f(x,y)}{g(x)}$

$g(x)=\sum_y f(x,y)$

$E[g(x)]=\sum_x$

Question 3: (5 marks) Suppose the HRD manager randomly selects 3 individuals from a group of 10 employees for a special assignment. Assuming that 4 of the employees were assigned to a similar assignment previously, determine the probability that exactly two of the three employees have had previous experience. What is the expected number of employees have had previous experience in a sample of size 5? What is the variance of the number of employees in the sample of size 5?

$E(X^2)-[E(X)]^2$

PTO