Seat /ID	Probability and Statistics	Section:
Date: 20-10-23	Quiz-2	Time: 25 mint

Problem :

Two ballpoint pens are selected at random from a box that contains 3 blue pens, 2 red pens, and 3 green pens. If X is the number of blue pens selected and Y is the number of red pens selected, the joint probability function be represented by

$$f(x,y) = \frac{\binom{3}{x}\binom{2}{y}\binom{3}{2-x-y}}{\binom{8}{2}},$$

	$f(x,y)$	x		
		0	1	2
y	0	$\frac{3}{28}$	$\frac{9}{28}$	$\frac{3}{28}$
	1	$\frac{3}{14}$	$\frac{3}{14}$	0
	2	$\frac{1}{28}$	0	0

a) Find the marginal distribution of x and y
b) Find the Mean and variance of x and y
c) Find the covariance of x and y
d) Find the correlation coefficeint between x and y
e) Are x and y indepandent random variable ?

Solution:

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Problem :

Given the joint density function

$$f(x,y) = \begin{cases} \frac{x(1+3y^2)}{4}, & 0 < x < 2,\ 0 < y < 1, \\ 0, & \text{elsewhere}, \end{cases}$$

a) Find the marginal distribution of x and y
b) Find the Mean and variance of x and y
c) Find the covariance of x and y
d) Find the correlation coefficeint between x and y
e) Are x and y indepandent random variable ?

Solution: