Seat /ID	Probability and Statistics	Section:
Date: 18-10-23	Quiz-2	Time: 25 mint

Problem :

Suppose that X and Y have the following joint probability distribution:

$f(x,y)$		x = 2	x = 4
	1	0.10	0.15
y	3	0.20	0.30
	5	0.10	0.15

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) **verify f(x,y) is a valid pdf**

Problem :

A privately owned business operates both a drive-in facility and a walk-in facility. On a randomly selected day, let X and Y, respectively, be the proportions of the time that the drive-in and the walk-in facilities are in use, and suppose that the joint density function of these random variables is

$$f(x,y) = \begin{cases} \frac{2}{5}(2x+3y), & 0 \le x \le 1, 0 \le y \le 1, \\ 0, & \text{elsewhere.} \end{cases}$$

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) **verify f(x,y) is a valid pdf**

Problem :

The joint and marginal pmf's for X = automobile policy deductible amount and Y = homeowner policy deductible amount

$p(x, y)$		y = 0	y = 100	y = 200
x	100	.20	.10	.20
	250	.05	.15	.30

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 ?**