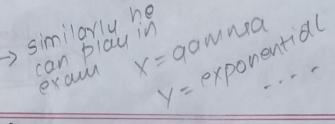
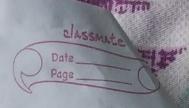
(eq:) Two ballpoint pens are selected at random
from a box that contains 3 blue pens, 2 red pens and 3 groon pens. If X is the number of blue pens selected and Y is the number of red Dens selected, then (DISCRETE RANDOME VARIABLE)

```
MI) TABULAR REPRESENTATION
     X = no of blue pens selected = 0/1/2
          no of red pens selected= 10/1/2
                                        x and y can
                                           respectively takes
                                          these rallies.
                                  Y=0 => 0 red pen solected
     X=0 =) no blue pen selected
                                       -> I ved pen selected
       =1 => I blue pen selected
                                 = 2 =) 2 red pen selected
       = 1 =) 2 blue pen selected
       = 3 = ) 3 bie pen selected -> case not possible here
                                    x cannot take value = 3
     (x,y) = (0,1) =) no blue + I red.
           = (1,1)=) I blue + I red.
            = (2,0) => 2 bue + 0 ved,
                      2 blue + I red.
            = (2(1) =)
           of 3 pens but we need to select only 2.
              X=X
                                    2
                                             I blue + Igreen,
Ored+
 Oplue 4
                                             2blue.
                                          I red + I blue,
 Ived -
 + 1 green.
           2.
                  2 red.
    FORMULA APPROACH
(m2)
                 PMF
     The joint
         X=x; Y=y = p(x_1y) = (3Cx)(2Cy)(3C_2-x-y)
             20 ; x < 1; 4 < 2; 470
```

·> 1	Yow when	we he	i gra	oint	Dvob	abiu	ty			
	Now when we have joint probability distribution, we also have individual									
	probability distribution called MARVINAL									
	PROBABILITY DISTRIBUTION									
l.										
(m1)	TABULAR RE	PRESENT	TATION		N.2	A.				
*										
	a Nea "	X=X	0	1	2	700l				
	to the second se	y=y	- 1 J		21		N 2			
, į	T		3/28	9/28	728	15/28	7			
	7	13/	01	1		3/2/	_) Sum=I			
		1	7/14	+ 9/147	U					
	()	2	V29 -		0 4	1/28				
		4	120		11					
		Total	5/14	15/38	3/28	34	j.			
٦	1	R(x)		sum	=1.		,			
, .		Valle of	napo	1 3	4	vano	dom			
	Hence individual probability of random variable x is pix) known as marginal pmf									
	of x and can be written as.									
7										
d.	X=x 0 1 2.									
	$\chi = x$ 0 I 2. p(x) 5/14 15/28 3/28									
	0 10	· - 1 1	aval	sa hili	HAIR	P vr	androm			
	Hence individual probability of random									
	variable y is ply) known as marginal pmf of y and can be written as.									
	y = (0	28 3		2					
	ply) 15/	28 3	/7	1/28	1				





(0) fet X denote the number of Canon-digital camera sold during a particular week by a certain store. The pmf of X is

$X=\infty$	0	1	2	3	4	
p(x)	0.1	0.2	0.3	0-25	0.15	

Sixty percent of all customers who purchase these cameras also buy an extended warranty. Let y denote the number of purchases during this week who buy an extended warranty.

(a) Calculate P(x=4, y=2)?

Now we can clearly see y is dependent on X cause Y = no of purchases which includes warranty, so to purchase warranty first you need to purchase i-e-X.

Y takes values 0,1,2....X.

$$P(Y|X) = P(Y|X) = P(Y=2|X=4) = P(X=4;Y=2)$$
 $P(X)$
 $P(X)$

> Y tollows Binomial distribution (obviously) => Y ~ B(n,p) => Y~ B(x,0.60)

$$P(X=4, Y=2) = P(Y=2 | X=4) \times P(X=4)$$

$$= (4) (0.6)^{2} (0.4)^{2} (0.15)$$

(b) Calculate
$$P(X=Y)$$
 (came as a)

= $P(X=0,Y=0) + P(X=1,Y=1) + P(X=2,Y=2)$
 $+P(X=3,Y=3) + P(X=4,Y=4)$
 $+P(X=3,Y=4) + P(X=4,Y=4)$
 $+P(X=3,Y=4) + P(X=4,Y=4)$
 $+P(X=3,Y=4) + P(X=4)$
 $+P(X=4,Y=4) + P(X=4)$
 $+P(X=4,Y=4$