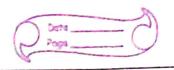
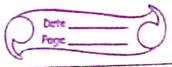


- 11	
	Two dimensional gandom variable:> Let x and y be
	turn flandom variables defined on the sample spaces
	is Vis-R and Yis-IR
	Then the function (X,Y): S->RXIR is Called
	a two dimensional sandom variable.
	Joint Perobability function:
	- 1. O. 11, - 2 4 - 4:1 A Chicago
	the joint puop fun of x and y & is represented as
	\times y_1 y_2 $ y_m$
	x P1 P12 P1m
	x ₂ P ₉ , P ₉₉ P _{9m}
	in Png Pnm
	xn Inj irng
	45 (xx) is a two-dimensional discrete 91.V. then the
	If (x,x) is a two-dimensional discrete 91.V. then the joint peop. Fun of x, y is called ~ peop. may function
	of x y- and is defined as
	$P_{xy}(x_i, y_i) = P(x = x_i, y = y_i) ; (x_i, y_i) \in (x, y)$
	(0 ; 0 w.
	Note P(x,y) 7,0.
	and $Z \subseteq P(x,y) = 1$.
	Fose Continuous; P(x,y) 70.
	Tose Continuous; $f(x,y) = 0$. $\int \int f(x,y) dy dx = 1.$
	No. of the second secon



and the contract of the contra	
	Marginal density functions: For two random variables X and Y; the marginal function of X is given
	$P(x) = \sum_{y} P(x = x, y = y) - discoute$
	$P(x) = \int P(x,y) dy$ - Continuous.
	The marginal function of Y is gives as $P(y) = \sum_{x} P(x=x, Y=y) - discrete$
	$P(y) = \int_{x} P(x, y) dx$ — Continuous.
	Gonditional density functions:> The Conditional density function of X given Y is defined as
	18 defined as $P(x y) = \frac{P(x=x, y=y)}{P(y)} = \frac{P(x,y)}{P(y)}$ $P(y) \longrightarrow \text{Maryinal of } y$
	Similarly, the Conditional density function of 4 given X
	$\frac{P(Y X) = P(X=X,Y=Y) - P(X,Y)}{P(X)} = \frac{P(X=X,Y=Y)}{P(X)} = \frac{P(X=X,Y=Y)}{P(X=X,Y=Y)} = \frac{P(X=X,Y=Y)}{P($
->	Two random variables X and Y are said to be
4	Independent if $P(x,y) = P(x) \cdot P(y) + (x,y) \in (x,y)$

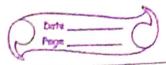


Exi-	Consider $X \& Y - be two 9.1.1s$ Such that $P(x=-1, Y=0)=1$; $P(x=0, Y=1)=\frac{1}{3}$;
	$P(x=1, Y=0) = \frac{1}{3}$
	Find (1) Mauginal dist fun of X and Y (2) Conditional dist fun of X given Y=1.
<u> </u>	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
	So Maryinal dist fun of X is X -1 0 1 P(x) 1/3 1/3 1/3
	Maryinal dist fun of y is
	$P(y) = \frac{2}{3}$ $P(x=x y=1) = P(x=x, y=1)$
	V(x-y)

P(y=1)



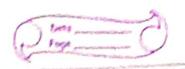
-	W. Control of the con	
y Marini Mility (Sharimani edi) nasanini	× -1 0 1	
	P(x=x y=1) 0 1/2 1/3	
	13 (121)	
		~
C	The second of valve of the	
410	The joint dist of X and Y is given by	
	$P(x,y) = \frac{x+y}{21}; x=1,2,3; y=1,2.$	
		0 111 1
	Find the marginal dist of X and Y. Find the	andrional
	$dist^{N}$ of Y gives $X=3$.	
5070	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
	$A = \{1, 1, 2\}$	
	3 4/21 5/21 9/21	
	9/21 12/21	
	Maryingl dist" of x and y are	
	X 1 2 3 Y 1 2	
	P(x) S/2, 7/2, 9/21 P(y) 9/2, 12/21	
	P(Y=y x=3) = P(Y=y,x=3)	
	P(x=3)	71
	y <u>1</u> 2	T ₁
and the second	P(145/x=3) 4/9 5/9	
	THE RESERVE OF THE PARTY OF THE	71572
		46.7
		<u> </u>
	the state of the s	lane of
	- 1° <u>L</u>	
	PA.	



		-
Que	The joint density function of x and Y is given by	
William Street	P(x,y)= K(2x+y); x=0,1,2; y=0,1,2.	
State of the last	(1) Find the value of K	
The second secon		
and the state of t	(2) Maryinal dist of X and Y (3) Are X and Y Independent Variables?	M. V.
installed dynamic policy ad posterior designation (and the con-	(3) Ane x and I map endent vacables:	
	(4) Find the Conditional dist of Y for x=x	
	==0() 1 × (y 0 1 2	
Soln	$\sum_{x \in Y} P(x,y) = 1$ $0 0 k 2k$	
the same of the same and the same	2 7 11	
	987k = 1	
	$\Rightarrow \begin{cases} k = 1 \\ 97 \end{cases}$	
Small majoricy in Completions in thesis was replaced management decreases		
Supplier to the contract of th	So X/V 0 1 2 Total	
land connected to realize all the control delicences in the control of the contro	121 121	-
	The state of the s	
programmer part age of the company o	Total 6/27 9/27 12/27	
Player (CCC) (All Play, addition have foresteen all three charge (control of the		
	So Mayinal dist of X	2.8
	P(x) 3/27 9/27 15/27	4
	P(x) 3/27 4/27 15/27	21
	Marginal dist of y	
	7 0 1 2	1
erryaminet yanus ammalugayin sabah bilandi, gudiam	P(y) 427 7/27 12/27	
		- 3
Con communications and constitution of the con	Two M.v. x &y are Independent if P(xx) = P(x). P(x)	- 4
	₩ (2,y).	- 4



	Page
	$P(0,0) = 0$ $P(0) = 3/97 \text{ and } P(0) = 6/97$ $So P(0,0) \neq P(0) \times P(0)$ $\Rightarrow X \text{ and } Y \text{ are not mdependent.}$
	Conditional dist ^h of Y for $x=x$ is $P(y x=x) = P(x,y)$ $P(x)$
	$\frac{P(y x=0)=Y x \ 0}{P(0)} = \frac{P(0,y)}{P(y x=0)} = \frac{1}{3} = \frac{2}{3}$
	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
	P(Y/x=2) 4/15 5/15 6/15
<u>Qu</u>	The joint density fun. of x and y is given by $P(x,y) = \frac{2x+y}{3!}; x=1,2,3; y=1,2.$
Soln	Find the means of X, Y, XY and X+Y. $E(x) = \sum x p(x)$ Where $p(x)$ is Marginal distribity of X.
	E(Y) = Zyp(y) where p(y) - Maryinal density of Y.
	$E(xy) = \sum xy \cdot P(x,y)$ $P(x,y) = \sum (x+y) \cdot P(x,y) \text{of } x \& y \cdot $ $E(x+y) = \sum (x+y) \cdot P(x,y) \text{of } x \& y \cdot $



	P X/Y	1	2	Total
	1	3/31	4/31	7/31
T insular	2	501	6/31	11/31
cooleenvil	3	7/21	8/21	15/31
and a state of	Total	15/31	18/31	and the second second

$$E(x) = 1.\frac{7}{31} + 2.\frac{71}{31} + 3.\frac{15}{31} = \frac{74}{31}$$

$$E(y) = 1.15 + 2.18 = 51$$

$$= 1.1 \cdot \left(\frac{3}{31}\right) + 1.2 \cdot \left(\frac{4}{31}\right) + \dots + 3.1 \cdot \frac{7}{31} + 3.2 \cdot \frac{9}{31}$$

- mirror	and Malicontinue	and the same of th	R
	Date	amount production of the	1
1	Page	NAME OF TAXABLE PARTY.	
A		The state of the later of the l	Section 18

Que	X/Y 1 2 3 4 5 6 Tobal					
	0 0 0 1/32 2/32 3/32 3/32 1/4					
	1 1/16 1/18 1/8 1/8 1/8 5/8					
AND AND THE PROPERTY OF THE PR	2 /32 /32 /64 /64 0 2/64 1/8					
Management of the section of the sec	Total 3/32 3/32 11/64 13/64 3/16 1/4					
	Find $P(x \le i)$; $P(y \le 3)$; $P(x+y \le 4)$.					
<u>S&In</u>	$P(x \le i) = P(x = 0) + P(x = i)$					
ī	massinal denity fun of X					
	= $\frac{maginal}{maginal}$ density fun of x $= \frac{7}{4} + \frac{5}{8} = \frac{7}{8}$					
	79 - 78 - 8					
	$P(Y \leq 3) = P(Y=0) + P(Y=0) + P(Y=3)$					
F						
	3 + 3 + 11					
E	= 23					
	= 23					
	P(x+y=4) => Paires which satisfy X+Y=4 are					
	$(0,1)^{\frac{1}{2}}$ $(0,2)$ $(0,3)$ $(0,4)$					
	(1,1) $(1,2)$ $(1,3)$, $(2,1)$ $(2,2)$					
	$58 \ P(x+y \le 4) = 13.$					
An Que	T 100					
9	Three balls are drawn at random From a box					
	Containing 2 W, 3 R, 4 B balls. If X denotes the no. of wed					
	balls du awn. Find the joint prob. dist of (X, Y).					
Ans	Y/x 0 1 2					
	0 /91 /2 //91					
	1 3/14 2/2 1/90					
	0 /21 /7 /21 1 3/14 2/7 1/28 3 . 1/7 1/14 0					
	1/84 0 0					