

SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

DEPARTMENT OF MATHEMATICS

1					0	
					(4)	
(2) The two dimensional random Variable (X, Y) has the joint						
Probabili	ty mass	function f	$F(x,y) = \frac{x+a}{a^2}$	$\frac{19}{2}$, $\chi = 0$, 1, 0, ,	
4=0,1,	a. Find	the Conditi	onal distributi	on of Y f	for $X = x$.	
Also find	the cond	ditional dis	tsibution of Y	given X =	1	
The	Conditiona	I distribut	tion of Y for	$\chi = \chi$ is		
-	f(y x)	= -f(x,y)	$\rightarrow 0$			
		-f(x)	- P	action of	x and Y.	
where f	(x,y) is	the joint	probability for		8	
f(x) where $f(x,y)$ is the joint probability function of x and Y. Given : $f(x,y) = \frac{x+2y}{27}$						
$f(0,0) = \frac{0+0}{27} = 0$ $f(1,1) = \frac{1+2}{27} = \frac{3}{27}$						
$f(0,1) = 0+2 = 2$ $f(1,2) = \frac{1+4}{27} = \frac{5}{27}$						
6	2	+ 27	$f(2,0) = \frac{2}{2}$	+0 = 27		
$f(0_{12}) = \frac{0+4}{27} = \frac{4}{27}$ $f(2_{10}) = \frac{2+0}{27} = \frac{2}{27}$ $f(2_{11}) = \frac{2+2}{27} = \frac{4}{27}$						
$f(1,0) = \frac{1+0}{27} = \frac{1}{27} f(2,2) = \frac{2+4}{27} = \frac{6}{27}$						
<u> </u>					1	
XX	0	1	·2	$P(\gamma = y)$		
0	D	1/27	2/27	3/27		
1	2/27	3/27	4/27	9/27		
a	4/27	5/27	6/27	15/27		
P(x = x)	6/27	9/27	12/27	1	1	

Scanned by CamScanner

16MA301-PROBABILITY AND QUEUEING THEORY

S.GOWRI/AP/MATHEMATICS

Page 1 OF 7



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)



DEPARTMENT OF MATHEMATICS

Conditional distribution of Y for X = X :	and a state of the
When $x = 0$,	
$P(Y = o x = o) = \frac{P(x = o, Y = o)}{P(x = o)} = \frac{o}{b/27} = o$	
$P(Y=1 X=0) = \frac{P(X=0, Y=1)}{P(X=0)} = \frac{2/27}{6/27} = \frac{1}{3}$	
$P(Y=2 X=0) = \frac{P(X=0, Y=2)}{P(X=0)} = \frac{4/27}{6/27} = \frac{2}{3}$	
When $\chi = 1$, $P(\chi = 0) = 6/27$	
$P(Y=o X=1) = \frac{P(x=1, Y=0)}{P(x=1)} = \frac{1/27}{9/27} = \frac{1}{9}$	
$P(Y=1 X=1) = \frac{P(X=1, Y=1)}{P(X=1)} = \frac{3/27}{9/27} = \frac{1}{3}$	
$P(X=1) = P(X=1, Y=2) = \frac{5}{27} = \frac{5}{9}$ When $x = 2$, When $x = 2$,	oint
When $\chi = a$, $P(\chi = 1)$ $9/a7$ 9	an I t
$P(Y=0 x=2) = \frac{P(x=2, Y=0)}{P(x=2)} = \frac{2/27}{12/27} = \frac{1}{6}$	y ten
$P(Y=1 x=a) = \frac{P(x=a, Y=1)}{P(x=a)} = \frac{4/a7}{1a/a7} = \frac{1}{3}$	
$P(Y = a / X = a) = \frac{P(X = a, Y = a)}{P(X = a)} = \frac{6/27}{1a/a7} = \frac{1}{2}$	
$P(x=2)$ $\frac{12}{27} = \frac{1}{2}$	
Scanned by CamSc	anner