Let & Le a set of every possible out comes of a random experiment and & we me sample space.

P60: 0 -> [0,1]

St

PCC)>0 P(CIVCZ...) = P(CI) + P(CD)..... Cohere Ciare disjoint

PCC) is called the production set function. ST 9 9 9 MILE THEORY EXPENIENT OF REAL OF THE PARTY OF TH

Apprecia to the manage of the process of the proces Thm 1: For each CE & P(C)=1-P(C) CkCx are dispair MARKET AN WELFARE PARTY OF THE STATE OF THE

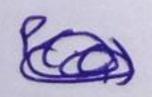
P(\$)=0 P(006)

CIRCZ are subset of C St GCCZ

P(G) = P(G, U (G, nG))

(A 3 ×) 19 3/1/39 For each CCG 0=PCC)=1

& C C C



Thm 5

 $P(C_1 \cup C_2) = P(C_1) + P(C_2) - P(C_1 \cap C_2)$ $P(C_1 \cup C_2) = P(C_1) + P(C_1^* \cap C_2)$ $P(C_1 \cup C_2) = P(C_1) + P(C_2^* \cap C_1)$ $P(C_2) = P(C_1 \cap C_2) + P(C_2^* \cap C_2)$ $P(C_1 \cup C_2) = P(C_1) + P(C_2) - P(C_1 \cap C_2)$

Random variobles

Defination: - Given a random experiment with a sample of

A function X which assigns to each element

CE & one and only one seal numbes

X(0) = X is called random variable.

X(0) = X is called random variable.

The space of X is the Set of year humbers (A = Fx; X=X/d)

if G themselver have real number X(C)= Z

so /A = G

Let A be a subset of A

Define Pr (XEA)

P(c) where C= { c; ce 6 and x(c) \(A \)

Notice Be(A) or Pr(XEA)
will satisfy all the theorems.

Obsider two random voriables x, kx2 st

X(C) = X, X2(C) = X2 C C C

(A = f(x,1)x2) | X,C X,CO & X2 C X2(O), C C C C

Pr ((x,1)x2) C A) A beea Subset of A

P (gc: x,Cc) = x1 & X2(c) = x2 7)

Example

Let G = (0,1) Let $P(C) = \int_C dx$ is $C = C \left(\frac{1}{4}, \frac{1}{2}\right)$ $P(C) = \int_C dx$ $\frac{1}{4}$

Define $\chi(0) = 3c + 2$ $A = \{x \neq 2cx < 5\}$ Let A = (2, 3) $\therefore c = (0, \frac{1}{3})$ $\Rightarrow P(c) = \frac{3}{3}dx$

Discrete random variable.

Let x denote a vandom variable with one dimensioned apaceA.

suppose 11 has finity many points.

Let f(x) he a junction

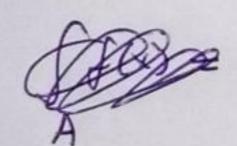
J:1A -> (0,1)

s st

 $\sum_{A} f(x) = 2$

when even $A \in A$ it can be expressed in terms stach a f(x) by

Continous type of random voriable



Let /A he one dimentional of and foo: 1A -> (0)1)st

x is said to be of continous type

if
$$A \subset A$$
 then
$$P(A) = \int_A f(x) dx$$

The notion of pat of one voriable X can be evaluated to notion of pat of two of more variable

X & Y are two discrete type or of the continous
type we have a distribution.

$$P(A) = f_{\delta}((x,y) \in A) = \sum_{A} f(x,y)$$

$$P(A) = \iint_{A} f(x,y) dxdy$$

This notion can be extended futher to n xandom variables

If d(x) is the pdf of a continous type of random variable x and is A is a set 9x; acxcb3 the PCA) =

Ps(xeA) or P(acxcb) is jointleted as

P(xeA) = Stex)dx

if A is singletor $9 \times = 9$ $P(X \in A) = \int_{a}^{b} f(x) dx = 0$

This fact enable us to write

Pr(a < x < b) = Pr(a < x < b)

This helps us to change the value of the pdf
of a continous type of random variable at a single
point without aftering the distribution of X.

f(x) = ex x>0 o otherwise

coan he written s

fas = ex x > 6

6 others

More generally if two probability dansity tunctions of a random variables of the continuous type differ only on a set having probability zero, the two probability set facilities are exactly some.

singletor ? x=a

O = No ZALL - Chasen

albou at en

Y = 612 X3 5