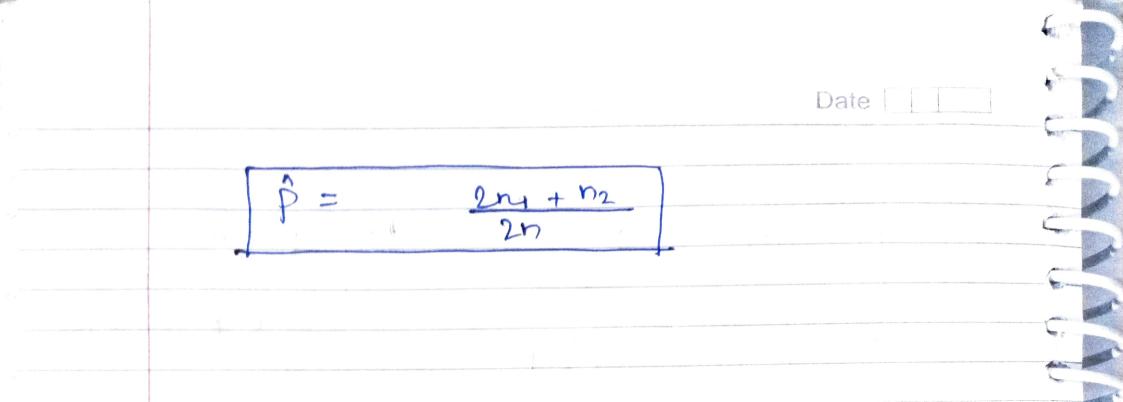
Sahaska Ranjan (190050102) DAI- Que 1 P (F,F) = P2 Ay of mean are independent) $P(F_1, F_2) = p(1-p)$ $p (f_2, f_2) = (-p)^2$ JL = (Pf, f) × (Pf, f) × (Pf, f) = $p^{2n_1} \times p^{n_2} (1-p)^{n_2} \times (1-p)$ $JL = P \times (1-P)$ JLL = (2n,+n2) to p + $(2n-2n_1-n_2)$ $\ln(1-p)$ $\frac{2n_{1}+n_{2}+2n_{2}-2n_{1}-n_{2}\times(-1)}{1-p}$ 8(JIL) = (for man exmand) 8 (511) = 0 . 0 1-0 $2n - 2n_1 - n_2$ $2n_1+n_2$ 2/n, + n/2 + 2n - 2/n, - xh 16 Nay 7



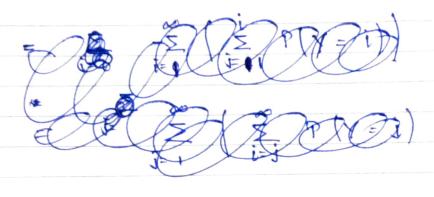
e) for a disrect PV, X,

$$E(x) = \sum_{i} x_i P(x = ni).$$

Therefore,

$$E(y) = \sum_{i=0}^{\infty} i \cdot P(y=i).$$

1 Square integral 1 transform.



$$= \sum_{i} i \cdot P(Y=i)$$

$$\sum_{i=1}^{\infty} \left\{ \sum_{j=1}^{\infty} P(y=i) \right\}$$

$$= \sum_{i=1}^{\infty} P(Y > i-1)$$

$$\sum_{i=0}^{\infty} P(Y)i'$$

Date Therefore, P (y > i) T=0

3)
$$P(x_1 = n_1) = +x_1(m_1)$$

 $P(x_2 = n_2) = +x_2(m_2)$

$$= P\left(x_1 x_2 \leqslant x\right)$$

$$= P(X_1 \times_2 \leq n, \times_1 \geq 0)$$

$$+$$
 $P(X_1X_2 \leq M, X_1 \leq 0)$

$$= P \left(x_2 \leq 9/x_1, x_1 \geq 0 \right)$$



$$CDP = \frac{F_{1}F_{1}}{F_{1}F_{2}} = \int_{0}^{\infty} \int_{0}^{\infty}$$

$$+\int_{-\infty}^{\infty}\int_{W_{E}}^{\infty}dx_{1}(t)dx_{2}(n/t)dndt$$

PDF:

$$\frac{\delta}{\delta x} = \sum_{x_1, x_2}^{x_1} |x_1|$$

$$= \sum_{x_1, x_2}^{x_2} |x_2|$$

$$= \sum_{x_2, x_3}^{x_1} |x_2|$$

$$= \sum_{x_3, x_4}^{x_1} |x_2|$$

$$= \sum_{x_4, x_4}^{x_4} |x_4|$$

$$= \sum_{x_4, x_4}^{x_$$

A

$$y$$
 $y(x) = -\sum_{i=1}^{k} P_i \log P_i$

$$P_{k} = 1 - \sum_{i=1}^{k-1} P_{i}$$

$$U(x) = -\sum_{i=1}^{k-1} P_i \log P_i - P_k \log P_k$$

$$u(x) = -kx \frac{1}{k} \log \frac{1}{k}$$

$$= \log k.$$

$$\frac{\delta^2 \text{ u(x)}}{\delta P_i^2} = \frac{-1}{P_i} + \frac{1}{P_k} (-1)$$

$$= -\left(\frac{1}{P_1} + \frac{1}{P_L}\right) < 0.$$
(Pi is +ve).

Date		
Mait		

PMF will be least fox

P. = 1,

and + mie 12, k) Pi = 0.

 $U(x) = -1 \log 1 + 0.$

= 0.

Minimum value = 0

408 P = 41,0... -01.

one of the Pi=1 & all other O.

= 0 otherwise

0 < 2 < 1

P = 1,

 $f_{\overline{z}}(z, f) = 1 \quad 0 < z < 1$ $2 \sqrt{z}$

O orternise.

P can be eigher 0 081.

(P=0) JL =

> (P=1). (OCZ<1). = $\left(2\sqrt{z}\right)^{h}$

0 < 2 < 1

0 < 52 < 1

1 > 1 $\frac{1}{2\sqrt{2}}$ \Rightarrow $\frac{1}{2}$

> 0 1 2n

JL < 1. But

h Havir IL is probabiling of happens i as 80, 408 P = 0

JL will be maximum (=1) for any given dietr. Of Z, Z, Z, ... Zn.