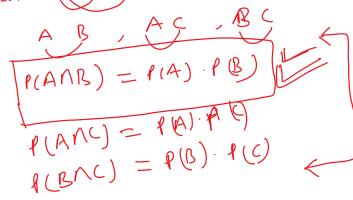
Saturday, January 16, 2021

A and B are independent events then (i) A and B (ii) B and A, (iii) A and B

PairWise Endependent events :-Lit A. A. & are three events than



Mutually Independent eventy's -Let A, B, C are three evenls then

$$(A,B), (A,C), (B,C), (B,C)$$
 $p(AnB) = p(A) \cdot p(B) - (D)$
 $p(AnC) = p(A) \cdot p(C) - (D)$
 $p(BnC) = p(A) \cdot p(C) - (D)$

P(ANBN()=

Note: - let A, Az, Az, -- - An are n-events the total no. of Conditions to be mutually independent events $|i| = 2^n - 1 - n$

lit N=3 We get

Tutal no of conditions = $2^3 - 1 - 3 = 8 - 1 - 3$

form that A and B are endependent if A and Bare Inde pendent evens. SOM:- 03 A and B are Independent => [P(ANB) = P(A).P(B)] Now we have to prove that on P(A NB) = P(AUB) = 1- P(AUB) = 1- (P(A) +P(B) - P(ANB) 1- P(B) - P(B) + P(A) · P(B) = [1-P(A)] - P(B) [1-P(A)] $= [1-P(B)] \cdot [1-P(B)]$ = RA). P(B) $P(\overline{A} \wedge \overline{B}) = P(\overline{A}) \cdot P(\overline{B})$ → A and \(\overline{\Delta}\) are 9n de pendent events. This of A,B,C are mutually independent events then (AUB) and (are do ande pendent. (AU) and B are also Independent. Noto:-(BU) and A Note: - of ANB=+ than PLA) < P(B) $P(B) \leq P(\overline{A})$

Let A and B are disjoint events (mutually exclusive) (i) only st. (i) is lowert $(A) P(A) \leq P(B)$ (ii) only St (ii) is comet $\ell(B) \leq \ell(A)$ (ii) only stat (ii) PLA) < P(B) (i) ad (ii) both correct only wond (ii) out: - Let A and B gare two events such that P(A) = 3 3:39 and P(B) = 8 then show that $\frac{3}{8} \leq P(A \cap B) \neq 2 = \frac{3}{8}$ Saly: - "ANB & A] = RANB) & P(B)

ANB & B] = RANB) & P(B) MOTO! - if A S B P(A) < P(B) PLANS) < Man (PA), PB) p(ANB) < man (3/8) PCANB) - 5 · P(AUB) < 1 P(A)+P(B)-P(ANB) <1 P(A) + P(B) -1 (E) P(ANB) =) P(A) + P(B) -1 $\Rightarrow P(ANB) > \frac{3}{4} + \frac{5}{2} - 1$ 1- TPLANS) > 3

Final) We get
$$\frac{3}{8} \leq P(ANB) \leq \frac{5}{8}$$

$$N \rightarrow 1$$
:- $P(A) + P(B) - 1 \leq P(A) \leq men(P(A), P(B))$

out:- The odds against Manager X settling the dispute with workens are 8:6 and odds in favour of manager y settling dispute are 14:16.

i) Find the prob. that neither settle the dispute (ii) Find the look to be settle the dispate.

5011. .; both manager X and Y are settling the dignto I independently. Hence both events are independent

A; Marrager X settle the dayprotop

B: Manager y settle the dispute

: A is en far = 6:8

$$\Rightarrow P(A) = \frac{6}{8+6} = \frac{6}{14} = \frac{3}{7} \Rightarrow P(A) = \frac{3}{7} \Rightarrow P(A) = \frac{1-94}{7}$$

and
$$P(B) = \frac{14}{14+16} = \frac{14}{20} = \frac{7}{15} \Rightarrow P(B) = \frac{7}{15} = \frac{4}{7}$$

$$P(B) = \frac{1}{15} = \frac{8}{15}$$