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Department of Mathematics

Long Answer questions

(1) State and Prove Addition Theorem of Probability or If A and B are any two events of sample space S & are not disjoint then prove that

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$ — page-15

2. State and Prove Baye's Theorem — Page-33

3. A card from a pack of 52 cards is lost from the Remaining card of the pack of Two cards are drawn and are found to be spades. Find the probability of lost card being a spade. — Page 38

4. A Random variable X has the following value of X

X	0	1	2	3	4
P(X=x)	k	k/2	k	2k-1/5	9/20

Page 47

find $P(X=2)$; $P(X \leq 1)$ $P(X<4)$, $P(X>3)$

5. STATE and Prove multiplication Theorem of Expectation. or If X and Y are independent variables then — Page 54

$$E(X \cdot Y) = E(X) \cdot E(Y)$$

6. — Page-58.

X=x :	-3	-2	-1	0	1	2
P(x) :	0.07	0.12	0.21	0.25	0.20	0.15

find E(x), $E(x^2)$, E(2x+3), Var(x), Var(3x+4).

7. Def. Moment Generating function, Binomial Distribution.

8. Def. Mean of Binomial Distribution, Poisson distribution Normal Distribution and Karl Pearson's coefficient of correlation coefficient → Page 72, 77, 85

Long questions Discrete Maths.

1. State and prove Laws of Syllogisms.
2. Define Bounded Lattices. Show that every finite Lattice is a bounded Lattice.
3. Define Modular Lattices. Show that dual of a Modular lattices is Modular.
4. Define distributive Lattice. Show that in a distributive Lattice, if an element has a complement then this complement is unique.