B.Sc. DEGREE EXAMINATION,NOVEMBER 2018
II Year III Semester
Allied Paper III
MATHEMATICAL STATISTICS - I

Time : 3 Hours **Max.marks :60**

Section A $(10 \times 1 = 10)$ Marks

Answer any **TEN** questions

1. Define probability.
2. State addition theorem of probability.
3. Define random variable.
4. State the multiplication theorem of expectation.
5. What is meant by conditional probability?
6. Write down the axioms of probability.
7. Define moment generating function.
8. State the properties of correlation coefficient.
9. Define correlation.
10. Define binomial distribution.
11. Write any two examples for poisson distribution.
12. Comment on the following: The mean of a binomial distribution is 3 and variance is 4.

Section B $(5 \times 4 = 20)$ Marks

Answer any **FIVE** questions

13. State and prove multiplication theorem of probability.
14. Mention the properties of moment generating function.
15. Write down the properties of regression coefficients.
16. Find the moment generating function about mean of binomial distribution.
17. Find the mean and variance of poisson distribution.
18. Prove the additive property of two normal variates.
19. Write down the properties of distribution function.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. State and prove Baye's theorem.

21. A random variable X has the following probability function:

Values of X, x:	0	1	2	3	4	5	6	7
P(x):	0	k	2k	2k	3k	k^2	$2k^2$	$7k^2 + k$

Find (i) k (ii) P[x$\leq$ 4] (iii) P[x $>$2]

22. State and prove chebyche's inequality.

23. Prove that the correlation coefficient is independent of change of origin and scale.

24. Write down the chief characteristics of the normal distribution.

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Find (i) k (ii) P[x$\leq$ 4] (iii) P[x$>$2]

22. State and prove chebyche's inequality.

23. Prove that the correlation coefficient is independent of change of origin and scale.

24. Write down the chief characteristics of the normal distribution and normal probability curve.