M.Sc. DEGREE EXAMINATION,APRIL 2020
I Year I Semester
Probability and Distribution Theory

Time : 3 Hours **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. State axioms of probability.
2. What is meant by screening test?
3. Define convolution.
4. Define conditional expectation.
5. Write the density function of negative binomial distribution.
6. What is meant by truncation of a distribution?
7. Give any two properties of bivariate binomial distribution.
8. Write the density of bivariate multinomial distribution.
9. Define independence of variables.
10. What do you mean by linear transformation of variables?
11. Define conditional probability.
12. What is the difference between discrete and continuous random variable?

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

Explain sensitivity, specificity, predictive value positive and negative with an example.

14. Discuss the properties of distribution function of a random variable
15. Obtain mean and variance of Pareto distribution.
16. Establish covariance of bivariate Poisson distribution.
17. Derive m.g.f of multivariate normal distribution.
18. Find mean and variance of Weibull distribution.
19. Establish relation between raw and central moments of a random variable.

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

Answer any **THREE** questions

20. State and prove Bayes theorem
21. Discuss central limit theorem.
22. Explain order statistics with an example.
23. Obtain mean and variance of bivariate exponential distribution.
24. Derive conditional distribution of bivariate normal distribution.

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