M.Sc. DEGREE EXAMINATION,APRIL 2020
I Year II Semester
Probability and Distributions

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

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

Answer any **TEN** questions

1. Define Negative Binomial distribution.
2. Name the distributions which satisfy memoryless property.
3. Write the variance of Beta distribution of first kind.
4. What do you mean by multiple random variables?
5. Define covariance.
6. Define Bivariate Binomial distribution.
7. What is the mean of Bivariate Normal distribution?
8. Define sampling distribution.
9. State additive property of Chi-square distribution.
10. Define F-statistic.
11. Define convergence in distribution.
12. State central limit theorem.

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

Answer any **FIVE** questions

13. Derive the mean and variance of Geometric distribution.
14. Describe the characteristics of Normal distribution.
15. Write a brief note on independence of multiple random variables.
16. Find the mean and variance of Bivariate Binomial distribution.
17. Explain the application of t-distribution.
18. Derive the mean of F-distribution.
19. Give a brief note convergence almost surely and convergence in r^{th} mean.

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

Answer any **THREE** questions

20. Define Hypergeometric distribution and also derive its mean and variance.

21. Describe covariance, correlation, moments and conditional expectation of multiple random variables.

22. Find the mean and variance of Bivariate Poisson distribution.

23. Derive t - distibution.

24. State and prove Linderberg - Levy central limit theorem.