

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)

(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)

Chromepet, Chennai — 600 044.

M.Sc. END SEMESTER EXAMINATIONS NOVEMBER - 2022

SEMESTER - I

20PBSCT1001 - Probability and Distribution Theory

Total Duration : 2 Hrs 30 Mins.

Total Marks : 60

Section A

Answer any **SIX** questions ($6 \times 5 = 30$ Marks)

1. Define and discuss discrete and continuous probability space.
2. Describe order statistics. Derive the distribution function of minimum order statistics.
3. Explain Bivariate Binomial distribution.
4. Derive the MGF of Multivariate Normal Distributions.
5. Write short note on: (i) Convolution (ii) Covariance.
6. Compute the mean of gamma distribution.
7. Explain about Bivariate exponential distribution.
8. Determine the distribution of sample mean vector of Bivariate normal distribution.

Section B

Part A

Answer any **TWO** questions ($2 \times 10 = 20$ Marks)

9. Explain and prove Baye's theorem.
10. State and prove central limit theorem.
11. Determine the mean and variance of lognormal distribution.
12. Compute the covariance and correlation coefficient of the random vector (X,Y) following Bivariate Poisson distribution.

Part B

Compulsory question ($1 \times 10 = 10$ Marks)

13. Deduce the marginal and conditional distributions of the Bivariate normal distribution.
