# PAPER - I
# PROBABILITY DISTRIBUTIONS

**e :** The question paper will be divided into three ions A, B and C as follows:

**tion A :** In this section, ten questions will be set ng two questions from each unit. Each question be of short answer type not exceeding 20 words will carry 1/2 mark. The candidate will be required ttempt all the questions (aggregating 5 marks).

**ion B :** In this section, ten questions will be set ng two questions from each unit. The answer of ı will not exceed 250 words or two and a half . Each question will be of 5 marks. The candidate be required to attempt five questions in all taking question from each unit (aggregating 25 marks).

**ion C :** In this section, four questions will be set ring all the five units and whose answers not not exceed 500 words or five pages each. Each tion may have sub parts in it and will carry 10 ıs. The candidate will be required to attempt any questions (aggregating 20 marks).

## UNIT I

ıyshev's inequality, Weak law of large numbers, ral limit theorem for i.i.d. random variables and le problems on them.

## UNIT II

variate Discrete Probability Distributions: pulli, Binomial and Poisson distributions with their derivations, properties and simple applications. Fitting of Binomial and Poisson distributions.

## UNIT III

Negative-Binomial and Hyper-geometric distributions with their derivations, properties and simple applications. Elementary idea of Geometric and Multinominal distributions.

## UNIT IV

Univariate Continuous Probability Distributions: Rectangular, Normal and Cauchy distributions, with their derivations, properties and simple applications. Fitting of normal distribution.

## UNIT V

Exponential, Beta type I, Beta type II and Gamma distributions with their derivations, properties and simple applications.

**Recommended Books:**

1. Gupta S.C. & Kapoor V.K. : Fundamentals of and Mathematical Statistics, Sultan Chand & Sons, New Delhi

2. Kapur, J.N. and Saxena H.C. : Mathematical Statistics, S. Chand & Company Ltd New Delhi.

3. Goon A.M., Gupta M.K. & Das Gupta B : An outlines of Statistical Theory Vol. I & II, World Press, Calcutta