

MOHANLAL SUKHADIA UNIVERSITY, UDAIPUR
FIRST YEAR B. Sc. STATISTICS 2016-17

PAPER -II
PROBABILITY THEORY

TIME: 3 hours

Max. Marks 50

UNIT - I

Random experiment, sample space, events, elements of an event, union and intersection of events, mutually exclusive, exhaustive, independent and equally likely events. Classical and Statistical definitions of probability and simple problems, Axiomatic approach to probability. Addition law of probability for two or more events.

UNIT - II

Conditional probability, Multiplication law of probability, Statistical independence of events, Baye's theorem and its simple applications.

UNIT - III

Random Variable Discrete and continuous random variables, Probability mass and density functions,- joint, marginal and conditional probability functions, Distribution functions.

UNIT -IV

Mathematical Expectation Definition of expectation, Addition and Multiplication laws of expectation, Moments in terms of expectation, variance and covariance for the linear combination of random variables. Elementary idea of conditional expectation. Schwartz's inequality.

UNIT - V

Moment generating and Cumulants generating functions with properties, Characteristic function with properties (without proof).

Recommended Books:

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| 1. Gupta S.C.and Kapoor V. K | : Fundamentals of 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 (1999) | : Fundamentals of Statistics,Vol.11, World
Press Calcutta |

Reference Books :

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| 1. Gokharoo D.C. and Saini, S.R. | : Mathematical Statistics (Hindi edition),
Navkar Prakashan, Ajmer. |
| 2. Bhargava, S.L. and Agarwal, S.M. | : Mathematical Statistics (Hindi edition),
Jaipur Publishing House, Jaipur. |
| 3. David, R. (1996) | : Elementary Probability, Oxford Press. |
| 4. Bhat B.R., Srivenkatramana T and
Madhava. K.S.(1977) | : A Beginner's Text, Vol II New Age Rao
International (P) Ltd |