

FIFTH SEMESTER

Mathematics

Course 15 B — MATHEMATICAL STATISTICS

(Regular)

Time : 3 Hours

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Max. Marks : 75

SECTION – A

Answer any FIVE questions.

(Marks : 5×5 marks = 25 marks)

1. List of all the sub-sets of the set $A = \{a, b, c, d\}$.
2. Define equally likely events and outcomes.
3. Explain the conditional probability.
4. State and prove Bayes theorem.
5. Explain Discrete Random Variables.
6. Explain Probability density function with examples.
7. Explain C.F. Give its properties.
8. Define moment generating function and state and prove its properties.

SECTION – B

Answer FIVE of the following questions. Each question carries equal marks.

(Marks : 5×10 marks = 50 marks)

9. (a) Define DeMorgan law and Distributive laws.

Or

- (b) Define mathematical statistical and axiomatic definitions of probability. Give their merits and demerits.

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10. (a) State and prove Boole's inequalities.

Or

- (b) State and prove Addition Theorem.

11. (a) Define probability mass function and its properties.

Or

- (b) Derive Probability density function mean and variance.

12. (a) Define Mathematical expectation and mention its properties.

Or

- (b) Define Moment generating function. State and prove additive property of MGF.

13. (a) Derive the Poisson distribution as a limiting case of Binomial distribution.

Or

- (b) Derive the Moment generating function of Binomial distribution.

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