CLASS : B.COM PART III

Revised Syllabus

ADVANCED STATISTICS

OPTIONAL PAPER - I

MATHEMATICAL METHODS AND PROBABILITY

: SECTION I :

Unit - I PERMUTATIONS & COMBINATIONS (12)

Definitions and Relations between them, Simple examples based on them. Binomial theorem (Without Proof) Simple examples based on it. Actual expansion, To find rth term. To find coefficient of certain term.

Unit - II DETERMINANT

Determinant, Definition & properties (without proof), determinant of order 2 & 3. Cramer's Rule. Simple examples. (15)

Unit - III MATRICES (15)

Definition of Matrix, Types of Matrices. Algebra of Matrices (Addition Subtraction & Multiplication), Inverse of Matrix by Ad joint method. Examples based on matrices upto order 3.

Unit - IV PROBABILITY THEORY (18)

Definition of terms used in probability, Definition of probability, Definition of conditional probability, Bays theorem.Addition and multiplication rules of probability. Examples on probability using permutation and combination.

: SECTION II :

Unit - V MATHEMATICAL EXPECTATION (15)

Definition of Mathematical Expectation of Univariate & Bivariate discrete random variable . Addition & Multiplication laws of mathematical expectation for discrete random variables only. Variance of discrete random variable. Simple Examples.

Unit - VI BINOMIAL DISTRIBUTION

Definition of p.m.f., Mean & Variance of Binomial Distribution. Properties of Binomial Distribution. Conditions under which binomial distribution is applicable. Fitting of Binomial distribution. Simple examples.

Unit - VII POISSON DISTRIBUTION (15)

Definition of p.m.f., Mean & Variance of Poisson Distribution. Properties of Poisson Distribution. Conditions under which Poisson distribution is applicable. Fitting of Poisson distribution. Simple examples.

Unit - VIII NORMAL DISTRIBUTION

(15)

p.d.f. of Normal Distribution and Standard Normal Distribution, normal probability curve. Properties of normal distribution. Examples based on area under normal curve.

REFERENCE BOOKS

- 1. A Text Book of Calculus :- Bhagwat & Pawate
- 2. Text Book of Matrices :- Shantinarayan
- 3. Statistical Methods by S.P. Gupta
- 4. Mathematical Statistics by Saxena & Kapoor.
- 5. Statistics by Sancheti & Kapoor.
- 6. Introduction to Mathematical Statistics by D. N. Elance.

(15)

CLASS : B.COM PART III

Revised Syllabus

ADVANCED STATISTICS

OPTIONAL PAPER - II

APPLIED STATISTICS AND OPERATION RESEARCH

: SECTION I :

Unit - I DEMOGRAPHY

(15)

Introduction, Measures of Mortality:: CDR, SDR, STDR by Direct Method. Measures of Fertility :CBR, GFR, SFR, TFR. Reproduction rates : GRR & NRR. Life table : Definition, Types, Functions of life table, Construction of life table. Uses of life table.Simple examples.

Unit - II TESTING OF HYPOTHESIS (12)

Definition of parameter, statistic, hypothesis (Simple & Composite) Null & alternative hypothesis, critical region, level of significance, Type I & Type II error, power of the test (Only Concepts).

Unit - III LARGE SAMPLE TESTS

- 1. Test for an assumed mean.
- 2. Test for comparison of means of two populations
- 3. Test for an assumed proportion.
- 4. Test for comparison of proportion of two populations Simple examples.

Unit - IV SMALL SAMPLE TESTS (18)

Tests based on t distribution:

- 1. Testing H_0 : M = M_0
- 2. Testing $H_0 : M_1 = M_2$

(15)

Tests based on Chi-square distribution.

- 1. Test of goodness of fit. Examples based on Binomial and Poisson Distributions.
- Test for independence of attributes.
 2 x 2 contingency table and mXn contingency table,

Tests based on F - Distribution

1. To test equality of variances. Simple examples.

: SECTION II :

Unit - V LINEAR PROGRAMMING PROBLEMS (15)

Introduction, concept, Mathematical formulation of the Problem. Solution by graphical method. Simple examples.

Unit - VI ASSIGNMENT PROBLEMS (15)

Assignment Problems for Minimization, Introduction, Mathematical formulation Hungarian algorithm, Problems on A.P.

Unit - VII TRANSPORTATION PROBLEMS

Transportation Problems for Minimization, Introduction, Methods of finding I.B.F.S., Testing solution for optimality, Problems on T.P.

(15)

Unit - VIII SEQUENCING (15) Introduction, Assumptions, Problem of Sequencing of n jobs through 2 machines, n jobs through 3 machines, n jobs through m machines, Simple examples.

REFERENCE BOOKS

- 1. Fundamentals of applied statistics by Gupta & Kapoor.
- 2. A text book of operations research by S.D.Sharma.
- 3. Quantitative techniques in decision making by J. K. Sharma.
- 4. A text book of operations research by R.K. Gupta.
- 5. Statistical methods by J. Medhi.
- 6. Fundamentals Mathe. Statistics by Gupta & Kapoor.
- 7. Introduction of Mathe. Statistics by D.N. Elance.

NATURE OF QUESTION PAPER FOR PAPER I & II

Each paper will contain two sections:-

Section : I

Question 1)	(a) & (b)	OR Question 1)	(a) & (b)	(16 - marks)
Question :2)	(a) & (b)	OR Question 2)	(a) & (b)	(16 - marks)
Question 3)	Attempt any ⁻	THREE out of given	5	(18 - marks)

Section : II

Question 4)	(a) & (b)	OR Question 4)	(a) & (b)	(16 - marks)
Question 5)	(a) & (b)	OR Question 5)	(a) & (b)	(16 - marks)
Question 6)	Attempt any	THREE out of given	5	(18 - marks)