B.COM. PART-I

PAPER-V: BUSINESS MATHEMATICS AND STATISTICS

INSTRUCTION: PAPER Consists of THREE Sections
Attempt TWO questions from SECTION A from THREE questions.
Attempt TWO questions from SECTION B from THREE questions.
Attempt TWO questions from SECTION C from FOUR questions.

SECTION: A

BUSINESS MATHEMATICS (20 MARKS)

1. COORDINATE GEOMETRY
Distance between two points, slope of a straight line, Equation of straight lines passing through two points, slope – intercept form, point and slope form. Graph of quadratic equation, vertex and roots of the equation.

2. CALCULUS
Idea of Limits, differentiation, rate of change, techniques in differentiation, Polynomial and composite function. Addition, Product and Quotient rule, Application of derivatives Marginal functions (cost, demand, supply, profit, revenue). Optimization of simple function, point of inflexion, maxima minima.

3. MATRICES AND DETERMINANTS.
Addition, subtraction, multiplication of matrices. Inverse of a matrix (upto 3 x 3) Determinants; properties of determinants, Cramer's Rule.

SECTION: B
ELEMENTARY STATISTICS (40 MARKS)

1. INTRODUCTION
Definition, scope limitation of statistics. Collection of primary and secondary data. Presentation of Data; Frequency distribution,

cumulative and relative frequencies Simple and composite diagrams, Pie diagram, Frequency Polygon, frequency curves. Histogram and ogive.

2. MEASURES OF CENTRAL TENDENCY

All the measures of central tendency and their properties including quartiles, deciles and percentiles, Graphical Determination median and quartiles.

3. MEASURES OF DISPERSION

Absolute and relative measures: range, quartile deviation, mean deviation standard deviation, variance. Skewness (moments not required).

4. REGRESSIONS AND CORRELATION

Scatter diagram linear regression models (two variables) estimation and forecasting. Idea of correlation, co-efficient of correlation and its properties. Rank correlation.

5. INDEX NUMBER

Introduction, application of index number Price index (fixed and chain relatives) Composite index number; weighted and unweighted. Special type of index numbers (Laspeyre, Passche, Fisher and Marshall Edgeworth).

SECTION: C

PROBABILITY & STATISTICAL INFERENCE

(40 MARKS)

1. COUNTING TECHNIQUES

Fundamental Principle. Permutation and combination.

2. PROBABILITY

Introduction, set theory, sample space, events. Equally likely, mutually exclusive, exhaustive, independent and dependent events. Addition and Multiplication laws of probability, conditional/ probability, Mathematical expectation (only concept of mean).

3. PROBABILITY DISTRIBUTIONS

Random variable, Binomial, Poisson, Hyper Geometric and Normal distributions.

4. SAMPLING

Concept of finite and infinite population. Simple random sampling methods of drawing simple random samples from finite population (with and without replacement), parameter and Statistics Standard error. Central limit theorem. Sampling distribution of mean and difference between two mean numerical proof of $E(x) = \mu$.

5. STATISICAL INFERENCE

Point and Interval estimation of mean and difference between two means for large and small samples. Null and Alternate Hypothesis. Idea of Type I and Type II Error test concerning mean and difference between two means for large and small samples (z and t tests). Chi square statistic for goodness of fit test and test for independence in contingency table:

BOOKS RECOMMENDED

i) Mr. Hamid A. Hakim **Business Mathematics:** 5th Edition Karachi Meyori Matbooaat, 2004.

ii) Mr. S. Khurshid Alam **Business Mathematics**, 8th Edition Karachi Rehber Publisher, 2004.

iii) Mr. Frank S. Budnick **Applied Mathematics**, International edition, United States. Mcgraw Hill book, latest edition.

iv) Mr. Hamid A. Hakim **Introductory Statistics for Economics and Management:** 5th Edition Karachi Meyari Matbooaat, 2004.

v) Mr. Shahid Jamal **Statistics Problem & Practices.** Ahmed Academy,2004

vi) Mr. S. Khurshid Alam Karachi: **Statistics Concept and Methods**, Rehber publisher, 2004.

vii) Mr. Ronald E. Walpole (Latest Edition). **Introduction to Statistics**, 2nd Ed.