

**H. N. G. University , Patan**  
**M.C.A – Semester - II**  
**MCA-21: Computer Oriented Numerical & Statistical Methods**

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**Unit: 1** [25%]  
**Solutions of Non-Linear Equations :**  
Absolute, Relative and Percentage Error, Roots of an equation, Linear and non -Linear equations (Definition and Difference), Methods for finding roots of non -Linear equations : Bisection Method, False Position Method, Newton -Raphson Method and secant Method ( Example only - No algorithm)

**Unit: 2** [25%]  
**Solution of Simultaneous Linear Equations :**  
Definitions : System of linear equations, Existence of unique roots, multiple roots and no roots, Difference between direct and iterative methods, Gauss -Elimination Method, Gauss-seidel Method

**Unit: 3** [25%]  
**Frequency Distribution :**  
Collection of data, Classification of data, Class interval, Types of Classes, Class frequency, Class mark, Class Boundaries, Width of a class, Frequency density, Relative frequency, Percentage frequency, Cumulative frequency  
**Method of Central Tendency :**  
Introduction, Arithmetic Mean, Simple and weighted for raw data, Discrete frequency distribution, Continuous frequency distribution, Properties of A.M., Merits & De merits of A.M., Median for raw data, Discrete frequency distribution, Continuous frequency distribution, Merits and demerits of Median, Mode for raw data, D.f.d., C.f.d., Merits & demerits of mode  
**Measures of Dispersion :**  
Introduction, Range, coefficient of range, Quartiles, Quartiles deviations, coefficient of quartile deviations, Mean deviation and coefficient of mean deviation, S.D and variance for all types of frequency distribution, Coefficient of Dispersion, Coefficient of variation

**Unit: 4** [25%]  
**Correlation :**  
Definition of Correlation, Types of Correlation, Scatter Diagram Method, Karl Person's Correlation Coefficients, Correlation Coefficients for Bivariate frequency distribution, Probable error for Correlation Coefficients  
**Regression :**  
Definition of Regression, Regression lines, Regression Coefficients, Properties of regression Coefficients, Fitting of regression lines and estimation for Bivariate frequency distribution

**Text Books :-**

**For Unit –I & II**

Computer Oriented Numerical Methods – Third Edition (V. Rajaraman)

**For Unit-III and IV**

Fundamental of Statistics – Sixth Edition(S.C. Gupta)

**Reference Book :**

- Introductory Methods of Numerical Analysis ( S.S. Sastry)
- Statistical Methods ( S.P. Gupta)
- Business Statistics ( R.S. Bhardwarj)

**Question Paper Scheme:**

**Section – I**

Q.1 - Objective Type Unit I & II (11) Marks

Q.2 - Unit-I OR Q.2 Unit-I (12) Marks

Q.3 - Unit-II OR Q.3 Unit-II (12) Marks

**Section – II**

Q.4 - Objective Type Unit III & IV (11) Marks

Q.5 - Unit-III OR Q.5 Unit-III (12) Marks

Q.6 - Unit-IV OR Q.6 Unit-IV (12) Marks