S. Y. B. C. A.

BCA -206 Statistics and Optimization Techniques

Teaching Scheme (per week)		Examination Scheme					
Th. (hours)	Pr. (hours)	Internal		External		Total	
		Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)	Th. (marks) _	Pr. (marks)
3	-	30	-	70	-	100	-

UNIT I : Frequency Distribution **(17 Marks)**

- 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

Measures 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 frequen cy distribution (C.F.S.), Merits and demerits of Median
- Mode for raw data and for C.F.S., 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 II : Correlation and Regression **(18 Marks)**

CORRELATION

- Definition of Correlation, Types of Correlation, Scatter Diagram Method, Karl Person's Correlation Coefficients, Rank Correlation Coefficients, Correlation Coefficients for Bi - variate 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 Bi -variate frequency distribution

Unit III. Linear Programming **(18 Marks)**

- Mathematical model, standard form of an LPP
- Graphical solution, Simplex method.
- Duality in LPP
- PERT & CPM

Unit IV. Transportation & Assignment model. **(17 Marks)**

- Introduction
- Mathematical Formulation
- Tabular Presentation
- Special Structure of Transportatio n Problem
- Optimum solution of transportation problem

- Optimality test
- Degeneracy transportation problem
- Mathematical formulation of the assignment problem

- Hungarian method for solving an assignment problem
- Unbalanced assignment problem
- Traveling Salesman Problem, Applications.

Text Books :

For Unit -I & II

1. Statistical Methods (S.P. Gupta)
2. Business Statistics (R.S. Bhardwarj)
3. Fundamental of Statistics (S.C. Gupta) **For**

Unit-III and IV

1. Sharma S.D. : Operation Research Kedar Nath & Co. Meerut, 1988 -89.

Question Paper Scheme:

University Examination Duration : 3 Hours.

Q.1 - Unit-I (17) Marks

A. Objective/ Short Questions.

B. Descriptive/ Long questions.

Q.2 - Unit-II (18) Marks

A. Objective/ Short Questions.

B. Descriptive/ Long questions

Q.3 - Unit-III (18) Marks

A. Objective/ Short Questions.

B. Descriptive/ Long question

Q.4 - Unit-IV (17) Marks

A. Objective/ Short Questions.

B. Descriptive/ Long questions

Note: 1. Options should be given in all questions.