ASSOCIATE DEGREE IN ARTS /SCIENCE

Statistics -I **Total Mark: 100**

Appendix 'A'

(Outlines of Tests)

Paper-A:	Statistics -I (Written)	:	75 Marks
Paper-B:	Practical	:	25 Marks

Appendix 'B'

(Syllabi and Courses of Reading)

Paper-A: Statistics-I **75 Marks**

Candidates are required to attempt five questions in all, at least two from each section.

Section-I: Descriptive Statistics (Weight 2/10):

Meaning of Descriptive and Inferential Statistics. Population and Sample. Types of variables, Measurement Scales. Sources of Statistical data in Pakistan. Description of data by frequency tables and graphs. Stem and Leaf Display and Box plots. Measures of Central Tendency: A.M. H.M. G.M., Mode, Median, Quantiles. Properties of Mean with proofs. Weighted Arithmetic Mean. Empirical Relation between Mean, Median and Mode. Relative Merits and Demerits of various averages. Measures of Dispersion: Absolute and Relative Measures, Range. Semi Inter-Quartile Range, Mean Deviation, Variance, Standard Deviation. Coefficient of Variation, Coefficient of Mean Deviation, Coefficient of Quartile Deviation, Properties of Variance and Standard Deviation with proofs. Standardized variable, Moments, Moment Ratios, Sheppard's Correction, Kurtosis and Skewness.

Index Numbers (Weight 1/10):

Construction and application of wholesale price Index Numbers. Fixed and Chain base methods. Weighted Index Numbers (Laspeyre's, Paasche's Fisher's Ideal and Marshall-Edgeworth's Indices). Tests for the consistency of Index Numbers Construction of Consumer price Index Numbers. Sensitive price Indicator.

Time Series (Weight 1/10):

Time series. Components of a time series. Analysis of time series. Measurement of secular trend and seasonal variations by various methods. Deseasonalization of data.

Simple Regression and Correlation (Weight 1/10):

Logic of regression and correlation. Scatter diagram, simple linear regression model, least square estimators and their properties, standard error of estimate. Meaning and application of linear correlation coefficient. Properties of correlation co-efficient. Correlation coefficient for bi-variate

frequency distribution. Meaning, Derivation and Application of Rank correlation for distinct and tied ranks.

Section-II: Probability (Weight 2/10):

Random experiments,' sample space and events. Counting techniques. Definitions and axioms of probability. Basic laws of probability. Independence of events. Bayes Theorem (proof not required) and its application.

Discrete Random Variable and Discrete Probability Distributions (Weight 2/10):

Random variable, Distribution function, discrete random variable. Probability distribution of a discrete random variable. Joint distribution of two discrete random variables, marginal and conditional distributions, mathematical expectation and its properties, mean, variance and moments. Concept of m.g.f. and its properties. Uniform, Bernoulli, Binomial, Hyper-geometric and Poisson distributions, mean, variance and shape of these distributions and their properties. Application of these distributions with examples from various fields. Multinomial distribution (only application).

Continuous Random Variable & Continuous Probability Distributions (Weight 1/10):

Continuous random variable. Probability distribution of a single continuous random variable, probability density function and distribution function. Mean, variance and moments of continuous random variable. Uniform and Normal distribution. Mean, variance and shape of these distributions and their properties. Application of these distributions. Normal approximation to the Binomial and Poisson distribution (just application). Fitting of Normal distribution by area method.

Note:- Separate practicals, each consisting of 25 marks will be held in third year and fourth year from the syllabus of these years respectively. Moreover, minimum 24 practicals according to the weightage of each topic may be covered.

Paper-B: Practical **25 Marks**

There will be two questions from each section and candidates are required to attempt one from each section. The distribution of marks will be as under:

Each question of 9 marks	i.e. 9 + 9	18 Marks
Practical Note Book:		03 Marks
Viva Voce:		04 Marks

Recommended Books:

1. Clarke G. & Cooke D. (1998). A basic Course in Statistics, Arnold Publisher, London, 4th Edition.
2. Wonnacott T.H. and Wonnacott R.J. (1981). Introductory Statistics, John Willy & Sons, New York.
3. Chaudhry, S.M. & Kamal, S. (1999). Introduction to Statistical Theory Parts I & II, Ilmi Kitab Khana, Urdu Bazar, Lahore.
4. Beg, M.A. and Mirza, M.D. (1997). Statistics, Theory and Methods, Volumes I & II, Carven Book House, Kutechery Road, Lahore.
5. Chase W Bown F. (1997). General Statistics, 3rd Edition, John Willy & Sons, New York.
6. Graybill, Iyer & Burdick (1998). Applied Statistics, A first course in inference. Prentice Hall, New Jersy.
7. Moore D.S., McCabe G.R., (1997). Introduction to the Practice of Statistics, 3rd Edition, Will Freeman & Co., New York.
8. Blumen (1997), Elementary Statistics, 3rd Edition, McGraw Hill, New York.
9. Chaudhry, R.M. (1998). Polymer Modern Statistics, Polymers.