ASSOCIATE DEGREE IN ARTS /SCIENCE

Statistics -II **Total Mark: 100**

Appendix 'A'

(Outlines of Tests)

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

Appendix 'B'

(Syllabi and Courses of Reading)

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

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

Section-I:

Sampling and Sampling Distribution (Weight 2/10)

Sampling designs of Simple random, Stratified random, Systematic random and Cluster sampling, Judgment and Quota Sampling. Random Numbers and their use in sampling. Advantages of sampling.

Probability and non-probability sampling, sampling and non-sampling errors, Calculation of sample mean, proportion and variance of simple random samples and stratified random samples. Sampling distribution of a statistic and its standard error. Sampling Distribution of mean, proportion, difference between two proportions and two means. Central limit theorem with illustration (Proof not required).

Statistical Inference (Weight 2/10)

Nature of statistical inference, point and interval estimation of parameter, properties of a good point estimator, confidence interval and its interpretation. Null and alternative hypotheses, simple and composite hypotheses. Type / and Type II errors. Level of significance. P-value and power of a test (only concept and definition), Acceptance and rejection regions, one sided and two sided tests, test procedure. Inference about single mean and difference between means for paired and un-paired observations. Inference about proportion and difference between two proportions. Determination of sample size. (Application of Normal distribution and t-distribution).

Inference About Variance (Weight 1/10)

Introduction and application of Chi-square distribution: Interval estimation and test of hypothesis about population variance (Interval estimation for variance - single sample). Introduction and application of F-distribution: test of hypothesis for equality of two variance.

Section-II:

Analysis of Count Data (Weight 1/10)

Chi-square test of Independence, Chi square test of goodness of fit, Chi- square test of homogeneity.

Regression and Correlation Analysis (Weight 2/10)

Multiple linear regression with two regressors, coefficient of multiple determination. Partial and multiple correlation up to three variables. Inference of simple correlation and regression, partial and multiple correlation. Interval estimates and tests of hypothesis about parameters, mean prediction and individual prediction.

Analysis of Variance (Weight 1/10)

Analysis of variance for one-way classification and two-way classification. Multiple comparison tests; Least significant difference and Duncans multiple range test.

Basic Experimental Designs (Weight 1/10)

Basic principles of experimental design. Completely randomized, Randomized Complete Block and Latin Square Designs, Descriptions, layouts, statistical analysis, advantages and limitations of these designs. Application of these designs (Analysis of all these designs with single observation in each cell).

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.