B.A/B.Sc. III Year: Statistics Syllabus
(For Non-Mathematics Combination)
(Examination at the end of III Year)

90 hrs
(3 hrs/ week)

Paper-III: Statistical Applications-I

Unit-I

Concepts of population, sample, parameter, statistic, sampling distribution of a statistic and its standard error (S.E)- Utility of S.E. of a statistic.
Notation of estimation – Point estimation- Concept of good estimator unbiased ness, consistency, sufficiency and efficiency definitions and examples. Concept of Interval estimation –statement of interval estimates for mean, variance of Normal population.

Tests of significance – concepts of null and alternative hypothesis, level of significance, type-I and type-II errors – power of the test – Large sample tests for proportion(s), mean(s) and Standard deviation – Small sample tests – Using t, F and Chi-square tests**.**   **25L**

Unit-II

Non-parametric tests – their advantages – comparison with parametric tests – measurement Scale – nominal, ordinal, interval and ratio. Test procedures of sign test – Wilcoxon signed rank test , median test and run test for randomness.

Need, definition and limitations of Index numbers – simple and weighted index numbers – Laspyer's, paasche's and Fisher Index numbers – Criterion of good index numbers – problems involved in the construction of index numbers – Fisher Index number as an ideal index number – Base shifting and splicing of index numbers. Cost of living index numbers**.**   **20 L**

Unit-III

Vital Statistics – Introduction – definition, uses, source of vital statistics – registration method, census method – rates and ratios, crude death rates – age specific death rate, standardized death rates – crude birth rate, age specific fertility rate, general fertility rate, total fertility rate. Gross reproductive rate and net reproductive rate – life table and abridged life tables.

Time series – Notation of time series – components of time series – methods of determination of trend by graphical, semi-averages, least squares and moving average methods- Determination of seasonal indices by simple average –ration to trend methods – ration to moving average – link relatives method.   **25L**

Unit-IV

Statistical process control (SPC): Importance of SPC in industry – Concept of chance and assignable causes of variation, Natural tolerance limits, specification limits, Control Charts for variables (Mean, Range, and S.D) and attribute (p, np and C) Charts with fixed and varying sample size – Interpretation of control charts , process capability index and its uses.

RECOMMENDED BOOKS:
1).Anuvarthitha Sankyaka Sastramu – Telugu Academy book.
2).Pratirupa Siddantham - Telugu Academy book.
3). Vyaapara Ganitham - Telugu Academy book.
4) V.K.Kapoor and S.C.Gupta: Applied Statistics .Sultan Chand
5). P.N.Arora and etal. Comprehensive Statistical Methods S.Chand
6). .V.S.Sarma: Do it yourself on your P.C. –MS Excel . PHI
7). Parimal Mukhopadhyay : Applied Statistics. New Central Book Agency.
8). S.P.Gupta: Statistical Methods. S.Chand
9).Goon Gupta & Das Gupta: Fundamentals of Statistics,VOL-I and Vol-II .world Press.Calcutta

Statistics practical examination

Time : 3 Hrs   Max marks : 50

Topic	No of questions to be set
Large & Small sample tests	1
Index numbers / NP tests	1
Vital statistics	1
Time series	1
SQC	1
Total	5

B.A/B.Sc. III Year: Statistics Syllabus
(For Non-Mathematics Combination)
(Examination at the end of III Year)
90 hrs
(3 hrs/ week)
Practical Paper-III
(Statistical Applications-I)

1).   Drawing of different samples of same size (with and without replacement) and Estimation of mean and s.d and Construction of C.I with a specified level of significance.

2).   Large sample tests for proportion(s), mean(s) and standard deviation(s).

3)   Small Sample tests for mean(s), variance(s) and significance of correlation

4)   Small Sample tests for mean(s), variance(s) and significance of correlation using MS Excel

5).   Computation of simple index numbers

6).   Computation of simple index numbers using MS Excel

7).   Calculation of weighted index numbers

8)   Calculation of weighted index numbers using MS Excel.

9)   Construction of Cost of living index numbers.

10)   Estimation of trend – moving averages and least squares method

11)   Estimation of trend – moving averages and least squares method by MS Excel

12).   Construction of $\bar{X}$ and R-charts.

13).   Construction of $\bar{X}$ and R-charts using MS Excel.

14).   Construction of P, np and C Charts

15).   Construction of P, np and C Charts using MS Excel

16).   Computation of various Fertility Rates

17)   Computation of various Mortality Rates

18).   Computation of various components of a life table.

Note: Training shall be on establishing formulae in Excel cells and deriving the results. The excel output shall be exported to MSWord for writing inferences.

B.A/B.Sc. III Year: Statistics Syllabus
(For Non-Mathematics Combination)
(Examination at the end of III Year)
Paper-IV : Sampling Techniques and Design of Experiments

90 hrs
(3 hrs/ week)

Unit-I

Sampling versus Census, planning organization and execution of sample surveys, pilot surveys, sampling and non-sampling errors, some large-scale surveys conducted in India, limitations of sampling.   **20L**

Unit-II

Probability and non-probability sampling Schemes, Random number tables and drawing of random samples, Simple random sampling (with and without replacement) Stratified random sampling, allocation of sample size under proportional and optimum allocation, systematic sampling – linear and circular.   **25L**

Unit-III

Cluster sampling, two stage with equal number of clusters. National income statistics-concept of National Income, methods of estimation of national income. Functions and organization of CSO and NSSO.   **20 L**

Unit-IV

Concept of analysis of variance, one- way and two-way classification. Principles of design of experiments, Randomization, Replication and Local Control, description of Completely Randomized Design, Randomized Block Design, and Latin square Design. 2^2 and 2^3 Factorial experiments and their relative merits.   **25L**

Suggested Books:
1. Sample Survey Siddanthalu – Telugu academy
2. Prayoga Rachana Visleshana- Telugu academy
3. Anuvarthitha Sankyaka Sastramu- Telugu academy
4. V.K.Kapoor and S.C.Gupta: Applied Statistics Sultan Chand
5. Goon, Gupta and Das Gupta: Fundamentals of Statistics ,VOL-II . World Press, Calcutta.
6. Daroga Singh and Choudary: Sample Survey Design Wiley Eastern.
7. Parimal Mukhopadyaya: Applied Statistics. New Central Book Agenc
8. S.P.Gupta: Statistical Methods. S.Chand
9. P.N.Arora and etal. Comprehensive Statistical Methods S.Chand

B.A/B.Sc. III Year: Statistics Syllabus
(For Non-Mathematics Combination)
(Examination at the end of III Year)

90 hrs
(3 hrs/ week)

Practical Paper - IV
(Sampling Techniques and Design of Experiments)

1. Drawing of Simple random sampling with replacement and simple random sampling without replacement.

2. Simple random Sampling

3. Stratified sampling

4. Systematic sampling

5. Estimation of National Income

6. Analysis of CRD

7. **Analysis of CRD using MS EXCEL**

8. Analysis of RBD

9. **Analysis of RBD using MS EXCEL**

10. Analysis of LSD

11. Analysis of 2^2 experiments

12. Analysis of 2^3 experiments.

Note: Training shall be on establishing formulae in Excel cells and deriving the results. The excel output shall be exported to MSWord for writing inferences

Statistics practical examination

Time : 3 Hrs   Max marks : 50

Topic	No of questions to be set
SRS	1
Stratified/Systematic sampling	1
ANOVA	1
Design of Experiments (CRD, RBD, LSD)	2
Total	5

NOTE: There is no change in the model Question paper for Statistics Non Mathematics Combination for paper III and paper IV

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