Unit-I
Sampling Theory: Principle steps in a sample survey, Censes versus sample survey, sampling and Non-sampling errors. Types of sampling - subjective, probability and mixed sampling methods.

Unit-II
Simple Random Sampling: Meaning of Samples and methods to draw, estimation of population mean, variances in SRSWR & SRSWOR.

Unit-III
Stratified random sampling: Proportional and optimum allocation of sample sizes in stratification. Variances in these methods. Systematic sampling: Systematic sampling when N = nk comparison of their relative efficiencies. Advantages and Disadvantages of above methods of sampling.

Unit-IV
Analysis of Variance: One way with equal and unequal classifications and two way classifications.

Unit - V
Design of Experiments: Principles of experimentation in Designs, analysis of completely randomised design (CRD), Randomised block design (RBD) and Latin square design (LSD) including one missing observation. Efficiency of these designs and concept of factorial Experiment.

Text Books:
1. Telugu Academy BA/BSc III year paper - III Statistics - applied statistics - Telugu academy by prof. K. Srinivasa Rao, Dr. D. Giri. Dr. A. Anand, Dr. V. Papaiah Sastry.
2. K.V.S. Sarma: Statistics Made Simple: Do it yourself on PC. PHI.

Reference Books:
3. Anuvarthita Sankyaka Sastram - Telugu Academy.

Practicals Semester – V
Conduct any 6 (Ms-exel is compulsory)
1. Estimation of population Mean, variance by SRSWOR.
2. Estimation of population Mean, variance by SRSWR.
3. Comparison of proportional, optimum allocations with SRSWOR.
5. ANOVA-CRD.
6. ANOVA - RBD with one missing observation.
7. ANOVA - LSD with one missing observation.

BA/BSC III YEAR : STATISTICS SYLLABUS
(With Mathematics Combination)
Semester-V CBCS.
Paper - VI Quality and Reliability

Unit-I
Importance of SQC in industry, statistical basis of shewart control charts, uses of control charts.
Interpretation of control charts, control limits, Natural tolerance limits and specification limits.

Unit – II
Variable Control Chart: Construction of $\bar{X}$, R charts for variables, Attribute control charts- NP, P
charts, C chart.

Unit-III
Acceptance sampling plans: Scope, Producer’s risk and consumer’s risk. Concepts of AQL and
LTPD.

Unit-IV
Sampling Plans: Single and double sampling plans, OC and ASN functions, Double and single
Sampling plans for attributes using Binomial.

Unit-V
Reliability: Introduction, failure rates, Hazard function, estimation of reliability, exponential
distribution as life model, its memoryless property.

Text Books:
1. BA/BSc III year paper - IV Statistics - applied statistics - Telugu academy by Prof.K. Srinivasa Rao,
Dr D.Giri, Dr A.Anand, Dr V.Papaiah Sastry.
2. Fundamentals of applied statistics : VK Kapoor and SC Gupta

Reference Books :
1. R.C.Gupta: Statistical Quality Control.

Practicals - Semester – V
Conduct any 6 (Ms-exel is compulsory)
1. Construction of $\bar{X}$, R charts.
2. Construction of P-chart-Fixed sample size.
3. Construction of P-chart-variable sample size
5. Construction of C-Chart.
7. MS-Excel methods for the Serial Numbers 2 to 4.
BA/BSC III YEAR : STATISTICS SYLLABUS
(With Mathematics Combination)
Semester - VI CBCS.
Paper - VII Applied Statistics

Unit-I
Analysis of times series: Components of times series: meaning and examples, trend by least squares (straight line and parabola) methods and moving average methods. Seasonal indices by simple averages, ratio to moving average, ratio to trend and link relative methods.

Unit-II
Index numbers: Meaning, problems involved in the construction of index numbers, simple and weighted index numbers. Criteria of good index numbers. Fixed base and chain base index numbers. Cost of living index numbers, wholesale price index numbers, Base shifting, splicing and deflation of index numbers.

Unit-III

Unit-IV
Vital statistics: Meaning, Definition, uses, sources of vital statistics, various Death rates- CDR, ASDR, STDR and Birth rates -CBR, ASFR, TFR.

Unit-V
Reproduction Rates: Measurement of population growth, crude rate of natural increase, Pearle's vital index, Gross Reproduction Rate[GRR], Net Reproduction Rates[NRR], Life tables, construction uses of life tables and abridged life Tables.

Text Books:
2. BA/BSc III year paper - III Statistics - applied statistics - Telugu academy by prof.K.Srinivasa Rao, Dr D.Giri. Dr A.Anand, Dr V.Papaiah Sastry.

Reference Books:
1. Indian Official statistics - MR Saluja.

Practicals - Semester - VI
Conduct any 6 (Ms-exel is compulsory)
1. Measurement of Linear Trend
2. Measurement of Seasonal Indices-Link Relatives method
3. Reversal tests.
4. Cost of living Index Numbers.
7. MS-Excel Practical.
BA/BSC III YEAR : STATISTICS SYLLABUS
(With Mathematics Combination)
Semester-VI CBCS.
Paper - VIII Operations Research

Unit-I
Introduction to OR: Meaning and scope of O.R, Definition of O.R, LPP (Linear Programming Problem). Formulation of LPP, graphical solution of LPP- Problems

Unit-II
LPP: Def. of LPP , IBFS, Basic and Non-basic variable, Slack variable, Surplus variable and Artificial variable .Simplex method, Big M, two phase simplex methods and problems

Unit - III

Unit-IV

Unit - V
Sequencing problem: Optimal sequencing of N Jobs on 2 and 3 machines without passing.

Text Books:

2. BA/BSc III Year paper - IV Statistics - quality, reliability and operations Research - Telugu Academy by Dr T.C.Ravichandra Kumar, Dr R.V.S.Prasad, Dr D.Giri, Dr G.S.Devasena.

List of reference books

2. Operations researchHh - Models and methods by Chandrasekar Salimath, Bhupendar Parashar.
3. Operation Research – Taha
Practicals - Semester – VI
Conduct any 6 Practical:

1. LPP - Graphic solution.
2. Simplex method.
3. Two phase simplex methods.
4. Transportation - NWCR, Matrix minima method, VAM for IBFS.
5. Assignment Problem (Balanced).
6. Unbalanced assignment problems.
7. Travelling salesman problems.
9. n jobs-3 machine sequencing problem.
BA/BSC III YEAR : STATISTICS SYLLABUS
(For Non - Mathematics Combination)
Semester - V CBCS.
Paper - V Statistical Applications - I

Unit - I
Statistical Inference – Estimation: Definitions of population, sample, parameter, statistic, sampling
distribution of a statistics, standard error. Estimation - Criteria of a good estimator, meaning of
interval estimation.

Unit – II
Statistical Hypothesis-Large sample Test: Null and alternative hypothesis, level of significance, type
I and type II errors, power of the test. Large sample tests for proportion (single & double), means
(single & double), and standard deviations.

Unit III-
Small sample tests: Tests of significance based on $\chi^2$, t and F. $\chi^2$-test for independence of
attributes, t-test for single, double and paired tests, Variance Ratio Test(F-test).

Unit - IV
Non parametric tests: Advantages, disadvantages, sign test, median test and run test for two sample
cases only.

Unit – V
Index Numbers: Definition and meaning of Index Numbers. Problems in the construction an index
number. Simple and weighted index numbers.-Laspyre's, Paache's and Fisher's indices. Cost of living
index numbers.

           2. Fundamentals of statistics - Goon Gupta and Das Gupta vol I and vol II.

Reference Books:

Practicals - Semester – V
Conduct any 6 Practicals
1. Large sample tests - Mean(s).
2. Large sample tests - Proportion(s).
3. Small sample tests – t for Mean(s).
4. F-test,
5. Chi square test for Independence of attributes.
6. N.P tests - Run test, Median test, Sign test.
7. Laspyre, Paashe, Fisher Indices.
BA/BSC III YEAR : STATISTICS SYLLABUS
(For Non - Mathematics Combination) Semester - VI CBCS.
Paper - VI Statistical Applications – II

Unit-I
Vital statistics : Meaning, definition, uses, sources, Death rates-CDR,ASDR,STDR,
Birth rates: CBR,ASFR,TFR

Unit-II
Reproductive rates: NRR,GRR. Life tables and Abridged life tables.

Unit-III
Time series: Meaning, components, trend- graphical, semi averages, straight line, parabola,
moving average methods. Seasonal indices : simple averages, ratio to trend, ratio to moving,
link relative methods.

Unit - IV
S.Q.C : Importance of Industry , chance, assignable causes of variation, natural tolerance and specification
limits.

Unit – V
Control Charts: $\bar{X}$, R Charts, NP,P,C charts for fixed sample size only.

Text Books:
2. Fundamentals of statistics - Goon Gupta and Das Gupta vol I and vol II.

Reference Books:
3. Applied statistics - Parimal Mukhopadhyay

Practicals - Semester – VI
Conduct any 6 Practicals
1. Birth rates
2. Death rates
3. Trend - straight line
4. Seasonal indices –Simple Average
5. $\bar{X}$, R Charts,
6. Attribute Control Chart: Np-chart
7. Attribute Control Chart: p-chart
BA/BSC III YEAR : STATISTICS SYLLABUS
(For Non - Mathematics Combination
Semester - V CBCS.
Paper - VII Sampling Techniques

Unit - I
Sampling theory: Population, sample, Sampling versus census, sample survey meaning, sampling and Non- Sampling errors, Limitations of sampling.

Unit-II
Sampling Methods: Principle steps in a sample survey. Types of Sampling-SRS, StRS, Sys.

Unit-III
Simple Random Sampling method: SRSWR , SRSWOR, Random number table method and lottery system. Sample mean is an unbiased estimate of population mean, sample mean of variance.

Unit-IV
Stratified random sampling: Meaning of stratified random sampling, merits and demerits. Definitions of proportional and Optimum allocations.

Unit - V
Systematic random sampling : Definition of systematic random sampling. Comparison of ( problem) SRSWOR, stratified and systematic samplings.


Reference Books:
1. Anuvarthita Sankyaka Sastram - Telugu Academy.

Practicals - Semester - V
1. Estimation of population mean in SRSWR.
2. Estimation of population variance in SRSWR
3. Estimation of population mean in SRSWOR.
4. Estimation of population variance in SRSWOR
5. Comparison of SRSWOR with optimum and proportional allocations.
6. Comparison of SRSWOR, stratified and systematic samplings.
BA/BSC III YEAR : STATISTICS SYLLABUS
(For Non - Mathematics Combination)
Semester -VICBCS.
Paper - VIII Design of Experiments and Official Statistics

Unit-I

Unit - II
Area, yield of statistics, Functions and organization of CSO and NSSO

Unit-III
Analysis of variance :- Meaning, definition, assumptions. One way and Two way classifications.

Unit - IV

Unit - V
Missing Plot Techniques: RBD, LSD, Concepts of Factorial experiments.

Text Books:
2. Applied statistics – Parimal Mukhopadyaya

Reference Books:
1. Anuvarthita Sankyaka Sastram - Telugu Academy.

Practicals - Semester - VI
1) ANOVA – equal One way classifications
2) ANOVA – unequal One way classifications
3) Two way classifications.
4) CRD.
5) RBD.
6) LSD.
MODEL QUESTION PAPER
STATISTICS
(With Mathematics Combination)
Common to B.A / B.Sc

Time: 3 hours

Max. Marks: 75

Section A

Answer any Five questions, each question carry 5 Marks
5x5 = 25 marks

1.
2.
3.
4.
5.
6.
7.
8

Section B

Answer all questions, each question carry 10 Marks
5x10 = 50 marks

9(a)
Or
(b)

UNIT - I

10(a)
Or
(b)

UNIT - II

11(a)
Or
(b)

UNIT - III

12(a)
Or
(b)

UNIT - IV

13(a)
Or
(b)

UNIT - V

[Signatures]

A. Mohan