

Nizam College, Osmania University, Hyderabad.
B.Sc (Statistics)
As per CBCS Pattern (w.e.f. 2015-2016)

The Course of study and scheme of examination:

Semester	Paper	Title of the Paper	No of Hrs Per week	Credits	Internal / Assignment marks	External Marks	Total marks
Sem I	Paper I	Basic Statistics and Theory of Probability.	4 Th 3 Pr	4 2	10	40 25	75
Sem II	Paper II	Distribution theory	4 Th 3 Pr	4 2	10	40 25	75
Sem III	Paper III	Statistical Methods and theory of Estimation	4 Th 3 Pr	4 2	10	40 25	75
Sem IV	Paper IV	Statistical Inference	4 Th 3 Pr	4 2	10	40 25	75
Sem V	Paper V	Design of Sample Survey And Time Series	3 Th 3 Pr	3 2	10	40 25	75
	Paper VI (Elective) Disciplinary	To choose 1 out of (a) or (b). 1). Operations Research, Vital Statistics and Indian Official Statistics. 2) Econometric Methods.	3 Th 3 Pr	3 2	10	40 25	75
Sem VI	Paper VII	Design of Experiments and Index Numbers	3 Th 3 Pr	3 2	10	40 25	75
	Paper VIII (Elective) Disciplinary- Inter Disciplinary	To choose 1 out of (a) or (b). 1) Demand analysis Statistical Quality Control & Reliability. 2) Operations Research-II	3 Th 3 Pr	3 2	10	40 25	75

NIZAM COLLEGE, OSMANIA UNIVERSITY, HYDERABAD
B.S.C I YEAR, I SEM SYLLABUS – STATISTICS (w.e.f. 2015-2016)

PAPER I: BASIC STATISTICS AND THEORY OF PROBABILITY

UNIT-I

Descriptive Statistics: Concept of Primary and secondary data, Methods of collection and editing of primary data, Designing a questionnaire and a schedule, Sources and editing of secondary data, Classification and tabulation of data, Measures of Central tendency (mean, median, mode, geometric mean and harmonic mean) with simple applications, Absolute and relative measures of dispersion (range, Quartile deviation, mean deviation and standard deviation) with simple applications, Importance of moments, central and non central moments and their interrelationships, Sheppard's corrections for moments for grouped data, Measures of skewness based on Quartiles and moments and kurtosis based on moments with real examples.

Unit-II

Probability: Basic Concepts in Probability- deterministic and random experiments, trial, outcome, sample space, event and operations of events, mutually exclusive events and exhaustive events, equally likely and favourable outcomes with examples, Mathematical, Statistical and axiomatic definitions of probability with merits and demerits, Properties of probability based on axiomatic definition, Conditional Probability and independence of events, Addition and Multiplication Theorems for n events, Boole's inequality and Baye's theorem with examples.

Unit-III

Random Variables: Definition of random variable, discrete and continuous variables, functions of random variables, Probability mass function and Probability Density functions with illustrations, Distribution function and its properties, Transformation of one dimensional random variable (Simple 1-1 functions only), Notion of bivariate random variable , bivariate distribution and statement of its properties, Joint, marginal and conditional distributions, Independence of random variables.

Unit-IV

Mathematical Expectation: Mathematical expectation of a function of a random variable, Raw and central moments and covariance using mathematical expectation with examples, Addition and Multiplication Theorems of Expectations, Definition of Moment Generating Function(m.g.f), cumulant Generating Function (c.g.f) , Probability Generating Function (p.g.f) and Characteristic Function (c.f) and statement of their properties with applications,

List of reference books:

- Goon AM.Gupta MK, Das Gupta B- Outlines of statistics volume I.
- B.L Agarwal –Basic Statistics
- V.K.Kapoor and S.C Gupta: Fundamentals of Mathematical Statistics, Sultan Chand & Sons, New Delhi.
- Outlines of statistics Volume I,
- II. S.P Gupta Statistical Methods.
- Statistics for Management by Levin and Rubin.
- Sanjay Arora and Mohan Bansi Lal. New Mathematical Statistics: Satya Prakashan, New Delhi

NIZAM COLLEGE, OSMANIA UNIVERSITY, HYDERABAD
B.A / B Sc I year I Semester Statistics Practical Syllabus (w.e.f. 2015-2016)

Time: 2hours

Max.Marks: 25

PAPER I: DESCRIPTIVE STASTICS AND PROBABILITY

List of Practicals:

1. Basics of Excel- Data entry, editing nad saving, establishing and copying formulae, built in functions in Excel, copy and paste and exporting of MS word document. (not for the examination)
2. Graphical representation of data(Histogram, Frequency polygon, Frequency curve)
- 3.**Graphical representation of data(Histogram, Frequency polygon, OGIVES) using MS- Excel**
- 4.Diagrammatic representation of data(Bar and Pie)
- 5.**Diagrammatic representation of data(Bar and Pie) using MS Excel**
6. Computation of Central and Non central moments- Sheppard's correction for grouped data.
7. Computation of Karl Pearson's and Bowley's Coefficient of Skewness and Kurtosis- β_1 and β_2 .
- 8.Computation of Measures of central tendency and dispersion, Coefficients of Skewness and Kurtosis using MS Excel

NIZAM COLLEGE, OSMANIA UNIVERSITY, HYDERABAD
B.A/B.S.C I Year II Sem Syllabus – STATISTICS

PAPER II: Distribution Theory (w.e.f. 2015-2016)

Unit I:

Discrete Distributions-I

Chebychev's and Cauchy-Schwartz's inequalities and their applications. Uniform, Bernoulli, Binomial and Poisson distributions. Negative Binomial, Geometric, Hyper Geometric distributions (Mean and Variance only).

Unit II :

Discrete Distributions-II

Properties of the above distributions such as m.g.f, c.g.f, p.g.f, c.f and moments up to fourth order and their real life applications, Reproductive property where ever exists, Poisson approximation to Binomial distribution. Binomial approximations to Hyper Geometric, Poisson approximation to Negative Binomial distribution.

Unit III :

Continuous Distributions-I:

Rectangular and Normal Distribution, Normal distribution as a limiting case of Binomial and Poisson distributions., Exponential, Gamma, Beta of two kinds(mean and variance only), Cauchy distribution (Definition and Ch.f only).

Unit IV :

Continuous Distributions-II:

Properties of these distributions such as m.g.f, c.g.f, c.f and moments up to fourth order, and their real life applications. Reproductive property wherever exists. Statement and applications of Weak law of large numbers and central limit theorem for identically independently distributed (iid) random variables with finite variance.

List of reference books:

- Goon AM.Gupta MK, Das Gupta B- Outlines of statistics volume I.
- B.L Agarwal –Basic Statistics
- V.K.Kapoor and S.C Gupta: Fundamentals of Mathematical Statistics, Sultan Chand & Sons, New Delhi.
- Outlines of statistics Volume I, II.
- S.P Gupta Statistical Methods.
- Statistics for Management by Levin and Rubin.
- Sanjay Arora and Mohan Bansi Lal. New Mathematical Statistics: Satya Prakashan, New Delhi

NIZAM COLLEGE, OSMANIA UNIVERSITY, HYDERABAD
B.A / B Sc I year II Semester Statistics Practical Syllabus (w.e.f. 2015-2016)

Time: 2hours

Max.Marks: 25

List of Practicals:

1. Fitting of Binomial distribution- Direct method
2. **Fitting of Binomial distribution(Direct method) using MS Excel**
3. Fitting of Binomial distribution- Recurrence method
4. Fitting of Poisson distribution- Direct method
5. **Fitting of Poisson distribution(Direct method) using MS Excel**
6. Fitting of Poisson distribution- Recurrence method
7. Fitting of Negative Binomial distribution
8. Fitting of Geometric distribution
9. Fitting of Hyper Geometric distribution
10. Fitting of Normal distribution(Areas method)
11. Fitting of Normal distribution(Ordinates method)
12. Fitting of Exponential distribution
13. **Fitting of Exponential distribution using MS Excel**
14. Fitting of Cauchy distribution
15. **Fitting of Cauchy distribution using MS Excel**

**NIZAM COLLEGE, OSMANIA UNIVERSITY,
HYDERABAD
B.A / B.Sc- II Year III Semester, Paper III:
Statistical Methods and Theory of Estimation
(w.e.f. 2016-2017)**

UNIT-I

Population correlation coefficient and its properties. Bivariate data scattered Diagram, sample correlation coefficient, computation of correlation coefficient for grouped data, correlation ratio, spearman's rank correlation coefficient and its properties. Principle of least squares, simple linear regression, correlation verses regression, properties of regression coefficients. Fitting of quadratic and power curves.

UNIT-II

Concepts of partial and multiple correlation coefficients(only for three variables).Analysis of categorical data, independence and association, partial association of attributes, various measures of association(Yule's) for two way data and coefficient of contingency(Pearson and Tcherprow),coefficient of colligation.

UNIT-III

Concepts of population, parameter, random sample, statistic, sampling distribution and standard error of sample mean(s) and sample proportion(s).exact sampling distributions-statement and properties of Chi-square, t and F Distributions and their inter relationships. Independence of sample mean and variance in random sampling from normal distributions. Point estimation of a parameter, concept of bias and mean square error of an estimate. Criteria of a good estimator .consistency, unbiasedness, efficiency and sufficiency with examples.

UNIT-IV

Statement of Neyman's factorization theorem, derivations of sufficient statistics in case of Binomial, poisson, normal and exponential (one parameter only) distributions. Estimation by method of moments, Maximum likelihood (ML), statements of asymptotic properties of MLE.concept of Interval estimation, confidence intervals of the parameters of the normal population by pivot method.

List of reference books:

- Goon AM.Gupta MK, Das Gupta B- Outlines of statistics volume I.
- B.L Agarwal –Basic Statistics
- V.K.Kapoor and S.C Gupta: Fundamentals of Mathematical Statistics, Sultan Chand & Sons, New Delhi.
- Outlines of statistics Volume I, II.
- S.P Gupta Statistical Methods.
- Statistics for Management by Levin and Rubin.
- Sanjay Arora and Mohan Bansi Lal. New Mathematical Statistics: Satya Prakashan, New Delhi

NIZAM COLLEGE, OSMANIA UNIVERSITY, HYDERABAD
B.A / B.Sc -II Year III Semester
Statistics Practical syllabus
(w.e.f. 2016-2017)

Time: 2hours

Max.Marks: 25

LIST OF PRACTICALS

- 1) Generation of random sample from uniform(0,1), uniform (a,b) and exponential distributions.
- 2) Generation of random sample from Normal and Poisson distributions.
- 3) **Simulation of random samples from Uniform(0,1), Uniform(a,b), Exponential Normal and Poisson distributions using MS- Excel.**
- 4) Fitting of a straight line and parabola by method of least squares.
- 5) **Fitting of a straight line and parabola by method of least squares using MS-Excel.**
- 6) Fitting of power curves of the type $y=ax^b$ and exponential curves $y=ab^x$ and $y=ae^{bx}$ by the method of least squares.
- 7) **Fitting of power curves of the type $y=ax^b$ and exponential curves $y=ab^x$ and $y=ae^{bx}$ by the method of least squares using MS-Excel.**
- 8) Computation of Yule's coefficient of association.
- 9) Computation of Pearson's Tcherprows coefficient of contingency.
- 10) Computation of correlation coefficient, forming regression lines for ungrouped data.
- 11) Computation of correlation coefficient, forming regression lines for grouped data.
- 12) **Computation of correlation coefficient, forming regression lines using MS-Excel**
- 13) Computation of Multiple and partial correlation coefficient.
- 14) **Computation of Multiple and partial correlation coefficient using MS-Excel.**
- 15) Computation of correlation ratio.

NIZAM COLLEGE, OSMANIA UNIVERSITY, HYDERABAD

B.A / B. Sc II Year IV Semester, Statistics Syllabus

Paper IV: Statistical Inference

(w.e.f. 2016-2017)

UNIT-I

Concepts of statistical hypotheses, null and alternative hypothesis, critical region, two types of errors, level of significance and power of a test. One tailed and two tailed tests, test function (non randomized and randomized). Neyman-Pearson's fundamental lemma for randomized tests. Examples in case of Binomial, Poisson, Exponential and Normal distributions and their powers.

UNIT-II

Large sample tests: use of central limit theorem in testing. Large sample tests and confidence intervals for mean(s), proportion(s), standard deviation(s), and correlation coefficient(s).

UNIT-III

Tests of significance based on chi square, t and F distributions. Chi square test for goodness of fit and test for independence of attributes. Definition of order statistics and statement of their distribution with simple examples.

UNIT-IV

Nonparametric tests-their advantages and disadvantages, comparison with parametric tests. Measurement Scale-nominal, ordinal, interval and ratio. One sample runs tests, sign test and Wilcoxon-signed rank tests (single and paired samples), two independent sample tests: Median test, Wilcoxon-Mann-Whitney U test, Wald Wolfowitz run test.

List of reference books:

Goon AM, Gupta MK, Das Gupta B-Out lines of statistics volume II.

B.L Agarwal –Basic Statistics

V.K.Kapoor and S.C Gupta: Fundamentals of Mathematical Statistics, Sultan Chand & Sons, New Delhi.

Outlines of statistics Volume I, II.

S.P Gupta Statistical Methods.

Statistics for Management by Levin and Rubin.

Sanjay Arora and Mohan Bansi Lal. New Mathematical Statistics: Satya Prakasham, New Delhi.

Siegel.s and Sidney: Non Parametric Statistics for Behavioral Science, Mc Graw Hill.

Gibbons J.D and Subhabrata Chakraborti: Non Parametric statistical Inference. Marcel Dekker.

Conover: Practical Non Parametric Statistics. Wiley Series.

**NIZAM COLLEGE, OSMANIA UNIVERSITY,
HYDERABAD
B.A / B.Sc- II Year IV Semester
Statistics Practical Syllabus
(w.e.f. 2016-2017)**

Time: 2hours

Max.Marks: 25

LIST OF PRACTICALS

1. Large sample test for mean(s), proportion(s), standard deviation(s) and correlation coefficient.
2. Small sample test for single mean and difference of means and correlation coefficient.
3. Paired t-test.
- 4. Small sample test for single mean and difference of means and correlation coefficient using MS-Excel.**
5. Small sample test for single variance and difference of variances.
- 6. Small sample test for single variance and difference of variances using MS-Excel.**
7. Chi-square test for goodness of fit and independence of attributes.
- 8. Chi-square test for goodness of fit and independence of attributes using MS-Excel.**
9. Non parametric tests for single and related samples (Sign test and Wilcoxon-signed rank test) and one sample run test.
10. Non parametric tests for two independent samples (Median test, Wilcoxon-Mann-Whitney U test, Wald Wolfowitz run test).

NIZAM COLLEGE, OSMANIA UNIVERSITY, HYDERABAD
B.Sc. III year- V Semester, Statistics Syllabus(w.e.f. 2017-2018)

Paper-V: Designs of Sample survey and Time series Analysis.

UNIT-I

Design of Sample Surveys: Concepts of population, sample, sampling unit, parameter, statistic, sample frame and standard error. Principal steps in sample surveys - need for sampling, census versus sample surveys, sampling and non- sampling errors, sources and treatment of non-sampling errors, advantages and limitations of sampling. Types of sampling: Subjective, probability and mixed sampling methods.

Methods of drawing random samples with and without replacement. Estimates of population mean, total, and proportion, their variance of the estimators by SRSWR and SRSWOR

UNIT-II

Estimates of population mean, total, and proportion and variance of the estimators by Stratified random sampling with proportional and Neyman's optimum allocations.

UNIT -III

Estimates of population mean, total, and proportion and variance of the estimators by Systematic sampling with $N=nk$. Comparison of their relative efficiencies. Advantages and disadvantages of the above methods of sampling.

UNIT-IV

Time series: -Time series and its components with illustrations, additive, multiplicative and mixed models. Determination of trend by least squares, moving average methods. Growth curves and their fitting with reference to Modified exponential, Gompertz and Logistic curves. Determination of seasonal indices by Ratio to moving average, ratio to trend and link relative methods.

List of reference books:

1. V.K.Kapoor and S.C.Gupta : Fundamentals of Applied Statistics. Sultan Chand
2. Parimal Mukhopadhyay : Applied Statistics . New Central Book agency.
3. Prayoga Rachana and Visleshana – Telugu Academy.
4. K.V.S. Sarma: Statistics made simple: do it yourself on PC. PHI
5. Daroga Singh and Chowdhary: Theory and Analysis of Sample survey designs. Wiley Eastern

NIZAM COLLEGE, OSMANIA UNIVERSITY, HYDERABAD
B.Sc. III year- V Semester
Statistics Syllabus(w.e.f. 2017-2018)

Paper-VI(a): Operations Research, Vital and Indian official statistics
UNIT – I

Optimization Techniques:

Meaning and scope of OR. Convex sets and their properties. Definition of general LPP. Formulation of LPP. Solution of LPP by graphical method. Fundamental theorem of LPP. Simplex algorithm. Concept of artificial variables. Big –M /Penalty method and two-phase simplex methods. Concept of degeneracy and resolving it, Concept of duality, duality as LPP. Dual Primal relationship.

UNIT – II

Transportation, Assignment:

Definition of transportation problem, TPP as a special case of LPP, Initial basic feasible solutions by North-West Corner Rule, Matrix minimum methods and VAM. Optimal solution through MODI tableau and stepping stone method for balanced and unbalanced transportation problem. Degeneracy in TP and resolving it. Concept of Transshipment problem.

UNIT – III

Formulation and description of Assignment problem and its variations. Assignment problem as special case of TP and LPP. Unbalanced assignment problem, traveling salesman problem. Optimal solution using Hungarian method.
Problem of Sequencing: Optimal sequence of N jobs on two and three machines without Passing.

UNIT-IV

Vital statistics: Rates and ratios, standardized rates. construction and uses of complete and Abridged life tables.

Official Statistics: - Functions and organization of CSO and NSSO. Agricultural Statistics, area and yield statistics. National Income and its computation, utility and difficulties in estimation of national income.

List of reference books:

1. Kanti Swaroop, P.K. Gupta and ManMohan: Operations Research. Sultan Chand.
2. Taha : Operations Research: An Introduction : Mac Millan.
3. Wayne L. Winston: Operations Research. Thomson, India edition. 4th edition.
4. Hadley : Linear programming. Addison-Wesley.
5. Operations Research: S.D. Sharma.
6. Operations Research: J.K. Sharma.

NIZAM COLLEGE, OSMANIA UNIVERSITY, HYDERABAD
B.Sc. III year, SEM-V

Statistics Practical Syllabus

Paper-V (Operations Research, Sampling and Time Series)

(w.e.f. 2017-18)

Time: 2hours

Max.Marks:25

OR:-

1. Formulation and graphical Solution of L.P. problem (using different inequality type constraints)
2. Solution of L.P. problem by simplex method.
3. Solution of L.P. problem by Big-M and two-phase simplex method.
4. IBFS for a transportation problem by North-West corner rule, Matrix minimum method and Vogle's approximation method.
5. Optimum solution to balanced and unbalanced transportation problem by MODI method.
6. Solution of balanced and unbalanced Assignment problem using Hungarian method (Both maximization and minimization type)
7. Solution of Traveling salesman problem.
8. Solution of sequencing problem- Processing of n jobs through two machines and three machines.

Vital Statistics:-

9. Computation of various mortality rates, fertility rates and Reproductive rates.
10. Construction of Life tables and Abridged life tables.

Sampling Techniques:-

Estimation of Population mean, population total and variance of these estimates by using

1. Simple random sampling with and without replacement. Comparison between SRSWR and SRSWOR.
2. Stratified random sampling with proportional and optimum allocations. Comparison between proportional and optimum allocations with SRSWOR.
3. Systematic sampling with $N = nk$. Comparison of Systematic sampling with Stratified and SRSWOR

Time Series Analysis:-

1. Measurement of trend by method of least squares and moving averages.
2. Determination of seasonal indices by the method of Ratio to moving averages, Ratio to trend and link Relatives.

**NIZAM COLLEGE, OSMANIA UNIVERSITY, HYDERABAD
B.Sc. III year, SEM-V**

Statistics Practical Syllabus

**Paper-VI (Operations Research, Sampling and Time Series)
Computer Lab
(w.e.f. 2017-18)**

Time: 2hours

Max.Marks:25

- 1) Solution of L.P. problem by simplex method using TORA.
- 2) Solution of L.P. problem by Big-M and two-phase simplex method using TORA.
- 3) Optimum solution transportation problem using North-West corner rule, Matrix minimum method and Vogle's approximation method for IBFS using TORA.
- 4) Solution of Assignment problem for both maximization and minimization using TORA.
- 5) Construction of various rates, life tables and abridged life tables using MS-Excel.
- 6) Measurement of trend by method of least squares and moving averages using MS-Excel.
- 7) Determination of seasonal indices by the method of Ratio to moving averages, Ratio to trend and link Relatives using MS-Excel.

NIZAM COLLEGE, OSMANIA UNIVERSITY, HYDERABAD
B.Sc. III year- VI Semester
Statistics Syllabus(w.e.f. 2017-2018)

Paper-VII: Designs of Experiments and Index numbers.

UNIT – I

Designs of Experiments: Concept of Gauss-Mark off linear model with examples, statement of Cochran's theorem, ANOVA – one-way, two-way classifications
Expectation of various sums of squares, Statistical analysis, Importance and applications of design of experiments. Principles of experimentation,

UNIT-II

Analysis of Completely randomized Design (C.R.D), Randomized Block Design (R.B.D) including one and two missing observation, expectation of various sum of squares. Comparison of the efficiencies of above designs.

UNIT-III

Analysis of Latin Square Design (L.R.D), including one and two missing observations, Comparison of the efficiencies. Expectation of various sum of squares. Analysis of 2^2 factorial design. Estimates of main effects and interaction effects. Yate's table for computation of F.

UNIT-IV

Index Numbers: -Concept, construction, uses and limitations of simple and weighted index numbers. Laspeyer's, Paasche's and Fisher's index numbers, criterion of a good index numbers, problems involved in the construction of index numbers. Fisher's index as ideal index number. Fixed and chain base index numbers. Cost of living index numbers and wholesale price index numbers. Base shifting, splicing and deflation of index numbers.

List of reference books:

1. V.K.Kapoor and S.C.Gupta : Fundamentals of Applied Statistics. Sultan Chand
2. B.L.Agarwal: Basic Statistics.New Age publications.
3. Anuvartita Sankhyaka sastram – Telugu Academy.
4. A.M.Goon,M.K.Gupta,B.Dasgupta Fundamentals of Statistics Vol II World Press Private Ltd.,Calcutta

**NIZAM COLLEGE, OSMANIA UNIVERSITY, HYDERABAD
B.Sc. III year, SEM VI**

Statistics Practical Syllabus

Paper-VII

(Designs of Experiments, Demand Analysis, SQC and Reliability)

(w.e.f. 2017-2018)

Time: 2hours

Max.Marks: 25

Designs of Experiment:

- 1) Analysis of Variance one-way with equal number of observations
- 2) Analysis of Variance two-way with equal number of observations
- 3) Analysis of CRD, analysis of RBD with and without missing observations.
- 4) Analysis of LSD with and without missing observations.
- 5) Comparison of relative efficiency of CRD with RBD and Comparison of relative efficiency of LSD with RBD and CRD

Index Numbers

- 6) Computation of simple and all weighted indices.
- 7) Computation of time reversal test.
- 8) Computation of Cost of living index number and whole sale index numbers.
- 9) Computation of fixed base and chain base index numbers.
- 10) Base shifting, splicing and Deflation.

Demand Analysis

- 11) Construction of Lorenz curve
- 12) Fitting of Pereto's law of an income data.

Statistical Quality Control

- 13) Construction of Mean, range and Standard deviation - charts.
- 14) Construction of p, np and C charts with fixed and varying n.
- 15) Designing a single and double sampling plans for attributes and construction of its OC and ASN curves.

NIZAM COLLEGE, OSMANIA UNIVERSITY, HYDERABAD
B.Sc. III year- VI Semester
Statistics Syllabus (w.e.f. 2017-2018)

Paper-VIII (A): Statistical Quality Control and Reliability

UNIT-I

Demand Analysis: Introduction. Demand and supply, price elasticity of supply and demand. Methods of determining demand and supply curves.

UNIT-II

Time series data Leontief's, Pigou's methods of determining demand curve from time series data, limitations of these methods Pigou's method from time series data. Pareto law of income distribution curves of concentration. Lorenz curve, Gini's coefficient.

UNIT-III

Statistical Quality Control: Importance of SQC in industry. Statistical basis of Shewart control charts. Construction of control charts for variables (mean, range and standard deviation). Interpretation of control charts. Construction of control charts for attributes (p, np, and c- charts with fixed and varying sample sizes). Interpretation of control charts. Natural tolerance limits and specification limits, process capability index. Concept of Six sigma and its importance.

UNIT – IV

Acceptance sampling plans: Concept of AQL and LTPD. Producers risk and consumer's risk. Single and Double sampling plans for attributes and their OC and ASN functions. Design of single and double sampling plans for attributes using Binomial and Poisson distributions

Reliability: Introduction. Hazard function, Exponential distribution as life model, its memory less property. Reliability function and its estimation. System reliability - series, parallel and k out of N systems and their reliabilities.

List of reference books:

1. D.C.Montgomery: Introduction to Statistical Quality Control. Wiley
2. V.K.Kapoor and S.C.Gupta : Fundamentals of Applied Statistics. Sultan Chand
3. Parimal Mukhopadhyay : Applied Statistics . New Central Book agency.
4. R.C.Gupta: Statistical Quality Control.
5. S.K.Sinha: Reliability and life testing. Wiley Eastern
6. L.S.Srinath: Reliability Engineering. Affiliated East-West Press.
7. M.R.Saluja : Indian Official Statistics. ISI publications.
8. B.L.Agarwal: Basic Statistics.New Age publications.
9. Parikriya parishodhana- Telugu Academy.

NIZAM COLLEGE, OSMANIA UNIVERSITY, HYDERABAD
B.Sc. III year SEM-VI
Statistics Practical Syllabus
(Designs of experiments, Index numbers, SQC demand analysis)
Paper-VIII

(w.e.f. 2017-2018)

Time: 2hours

Max.Marks: 25

- 1) Analysis of Variance one-way with equal number of observations using MS-Excel.
- 2) Analysis of Variance two-way with equal number of observations using MS-Excel.
- 3) Analysis of CRD, analysis of RBD with and without missing observations using MS-Excel.
- 4) Analysis of LSD with and without missing observations using MS-Excel.
- 5) Computation of all weighted indices, Cost of living index number, Base shifting, splicing and Deflation using MS-Excel.
- 6) Construction of Lorenz curve using MS-Excel.
- 7) Construction of Mean, range and standard deviation - charts using MS-Excel
- 8) Construction of p, np and C charts with fixed and varying n using MS-Excel
- 9) Construction of OC and ASN curves for single and double Sampling plan using MS-Excel

NIZAM COLLEGE, OSMANIA UNIVERSITY, HYDERABAD
B.Sc. III year- VI Semester
Statistics Syllabus- Elective-II
PAPER –VIII (B): Operations research-II

(w.e.f. 2017-18)

Objectives:

To frame and solve Game Theory and Network Problems , with their applications.

Unit-I:

Game theory – Introduction, Basic terms- Competitive game, zero sum and non zero sum games, strategy, two person zero sum games, pay off matrix, The minimax and maximin principle, Games without saddle point- mixed strategies. Graphic solution of $2 \times n$, $m \times 2$ games.

Unit- II:

Dominance property- principle of dominance to reduce the size of the game, generalized Dominance property, Arithmetic method for $n \times n$ games, General solution of rectangular games, game against passivity.

Unit III:

Network scheduling by PERT/CPM – Network and basic components, logical sequencing, Rules of network construction, distinction between PERT and CPM.

Unit IV:

Float concept- Total float, Free float, Independent float, Interfering float, Event slacks, Time scale representation of floats and slacks. Critical path analysis, Probability considerations in PERT.

List of reference books:

1. Kanti Swaroop, P.K. Gupta and ManMohan: Operations Research. Sultan Chand.
2. Taha : Operations Research: An Introduction : Mac Millan.
3. Wayne L. Winston: Operations Research. Thomson, India edition. 4th edition.
4. Hadley : Linear programming. Addison-Wesley.
5. Operations Research: S.D. Sharma.
6. Operations Research: J.K. Sharma.

NIZAM COLLEGE, OSMANIA UNIVERSITY, HYDERABAD
B.Sc. III year SEM-VI
Statistics Practical Syllabus

Paper-VIII (B)

(w.e.f. 2017-18)

Time: 2hours

Max.Marks:25

List of practicals :

Game theory:

1. Determining the saddle point by minimax and maximin rules
2. Determining the optimum strategy for the games without saddle point
3. Graphic solution of $2 \times n$ and $m \times 2$ games
4. Solving games using dominance principles
5. Solving games by LPP
6. Solving games using algebraic method

Network scheduling:

7. Construction of Network diagrams
8. Construction of floats
9. Finding critical path by CPM
10. Finding critical path by PERT

NIZAM COLLEGE, OSMANIA UNIVERSITY, HYDERABAD
B.Sc. III year- V Semester
Statistics Syllabus- Elective-II
Paper-VI (B): ECONOMETRIC METHODS
(w.e.f. 2017-18)

Objective:

To impart knowledge of inference techniques for economic phenomena.

UNIT – I

Nature of Econometrics – Model building – Role of econometrics – Multiple regression, Polynomial regression, Estimation of the parameter, Structural and reduced forms.

UNIT – II

The two variable linear model – Least squares estimators – Properties of the least squares estimators – Inference in the least squares model, the k – variable linear model – Assumptions of the linear model.

UNIT – III

Ordinary least squares (OLS) estimators – Properties of OLS estimators – Gauss – Markov theorem – Inference problems. Problems in linear model – Multicollinearity – specification error .

UNIT – IV

Autocorrelation – Heteroscedasticity , Special models – Dummy variables, Lagged variables – Sources of lagged variables – Koyck scheme and Almon lags.

Books for Study and References:

1. Gujarati, Damodar (1995). Basic Econometrics. McGraw – Hill Book Company, New Delhi.
2. Johnston, J. (1984). Econometric Methods. 3rd edn. McGraw – Hill Book Company, New Delhi.
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NIZAM COLLEGE, OSMANIA UNIVERSITY, HYDERABAD
B.Sc. III year, SEM-V

Statistics Practical Syllabus

Paper-VI (B)

(w.e.f. 2017-18)

Time:2hrs

Max.marks:25

List of Practicals:

1. Fitting of multiple regression model(3 variables).
2. Computation of R^2 .
3. Computation of auto correlation function.
4. Computation of Multicollinearity.
5. Computation of Dummy variable regression.
6. Computation of OLS estimators.
7. Testing of Heteroscedasticities.
8. Computation of Koyck scheme.