

To be effective from Year 2017-2018

New Syllabus of Gujarat University for B. Com. **Semester - V**

CC 305 STATISTICS – V

Unit 1 : Integration and its application (25%)

Definition of Integration, Rules of integration (For constants and addition as well as subtraction rule). Simple sums on the basis of rules of integration and standard functions like x^n , $(ax + b)^n$, a^x , $a^{mx + n}$, $1/(ax + b)$, $e^{ax + b}$. Definition and properties of definite integration and its uses (for Total Revenue, Total Cost and Profit from Marginal Revenue and Marginal Cost and sums on the basis of the same)

Unit 2 : Poisson Distribution and Hypergeometric Distribution (25%)

Meaning and Probability mass function of Poisson distribution. Its properties (without proof) and uses. Simple related sums.

Meaning and Probability mass function of Hypergeometric Distribution. Its properties (without proof) and uses. Simple related sums.

Unit 3 : Process Control Technique (Statistical Quality Control) (25%)

Meaning of Quality and Quality Control and its uses in Industry – variation in quality – principle of control chart – Process Control Limits, Revised Control Limits, Run Theory, Variable Charts (\bar{x} and R) and their sums, Attribute Charts (control limits without proof). Sums of attribute charts (For constant sample size np, p and c chart). Difference between Variable Chart & Attributable Charts.

Unit 4 : Lot Control Technique (Acceptance Sampling) (25%)

Meaning of Lot (Product) Control and its uses. Single Sampling Plan, AQL, LTPD, Producer's Risk, Consumer's Risk, Operating Characteristic Curve, ASN, ATI and AOQ. Simple sums on the basis of Hypergeometric Distribution and Poisson Distribution only.

References Books:

- (1) Grant E.L.: Statistical Quality Control, McGraw Hill.
- (2) Duncan A.J.: Quality Control and Industrial Statistics. Taraporewala and Sons.
- (3) Levin and Rubin: "Statistics for Management", Prentice Hall of India Pvt. Ltd. New Delhi
- (4) Sancheti & Kapoor : Business Statistics. Sultan Chand & Sons, New Delhi.
- (5) Sancheti & Kapoor : Business Mathematics, Sultan Chand Sons, New Delhi.

To be effective from Year 2017-2018

New Syllabus of Gujarat University for B. Com. **Semester – V**

CE 301 B Advanced Statistics VII

HOURS: 3/WEEK

CREDIT: 3

EXAM HRS: 3

1. Inventory Control : [25%]

Introduction, Meaning of Inventory Control, Advantages of Carrying Inventory, Terms of Inventory Controls, Various Deterministic Inventory Models: Economic Order Quantity (EOQ) without Shortages (derivation of the model), EOQ with Shortages, EOQ with finite production rate, EOQ with Price Discounts, simple examples based on these models.

2. Queuing Theory: [25%]

Introduction, Essential features of Queuing Systems (Input source, Queue configuration, Queue discipline, Service pattern), Operating characteristics of Queuing System (Expected waiting time in queue and system, expected number of customers in queue and system, busy period of server), Probability distribution in Queuing Systems, Queuing Models: M/M/1 with unlimited and limited queue length, simple examples based on these models.

3. Sequencing Problems: [25%]

Introduction, Notations, Terminology and Assumptions of Sequencing Problem, Processing n jobs through two machines, processing n jobs through three jobs, simple examples based on these models, simple examples based on these models.

1. Transportation Problems: [25%]

Introduction to the T.P., Mathematical formulation of T.P., Loops in T.P. and their properties, Methods for finding Initial Solution: North West Corner, Least Cost, Vogel's Approximation Method., Test for Optimality, MODI Method for obtaining Optimal Solution., Special Cases in T.P. (Unbalanced problem, Degeneracy, Alternative Optimal Solution, Prohibited routes), Maximization T.P.

Reference Books:

1. H.A.Taha, Operations. Research, Macmillan Publishing Co. Inc.
2. Vohra N.D, Quantitative Techniques in Management Tata McGraw Hill, New Delhi.
3. J.K.Sharma : O.R. Theory and Applications, Macmillan India Ltd.
4. Anderson, Sweeney, Williams, An Introduction to Management Science Quantitative Approach to Decision Making, Cengage Learning India Pvt. Ltd. New Delhi.
5. Barry Render, Ralph M. Stair, Michael E. Hanna, Quantitative Analysis for Management, Pearson Education(Singapore)Pte. Ltd.

To be effective from Year 2017-2018

New Syllabus of Gujarat University for B. Com. **Semester – V**

CE 302 B Advanced Statistics VIII

HOURS: 3/WEEK

CREDIT: 3

EXAM HRS: 3

1. Student's t Test: [25%]

Introduction to t-distribution, its probability density function (statement only), assumptions for small sample tests, applications of t-test (both one and two tailed): (1) testing mean of a small sample, (2) comparing means of two samples (independent samples), (3) paired t-test for dependent samples, simple examples based on these tests.

2. Chi-square Test: [25%]

Introduction to chi-square distribution, its probability density function (statement only), applications of chi-square test: (1) testing variance of a small sample, (2) testing independence of attributes using $m \times n$ contingency table, using the formula for 2×2 contingency table with Yate's correction (without proof), (3) testing goodness of fit (Binomial and Poisson distributions only), simple examples based on these tests.

3. Variance Ratio Test and Experimental Design: [25%]

Introduction to F-distribution, its probability density function (statement only), applications of F-test: (1) comparing variances of 2 small samples, (2) testing means of several small samples – ANOVA (one way and two way analysis). Concept of design of experiments, principles of design of experiment – randomization, replication and local control, concepts of CRD, RBD and LSD with illustrations

4. Non Parametric Tests: [25%]

Meaning - Importance of NP test, Sign test, Median test, Run test, Mann-Whitney test, Wilcoxon's test, Kruskal-Wallis test, Kolmogorov - Smirnov test (without derivation). Simple examples (table value given), simple examples based on these tests.

Reference Books:

1. Goon. Gupta, Dasgupta : "An outline of Statistical Theory" Vol-1 and II. World Press, Calcutta
2. Sancheti & Kapoor : Business Statistics. Sultan Chand & Sons, New Delhi.
3. S.C. Gupta: "Fundamentals of Mathematical Statistics" Sultan Chand & Sons, New Delhi.
4. Levin and Rubin: "Statistics for Management", Prentice Hall of India Pvt. Ltd. New Delhi.
5. Parimal Mukhopadhyay : "Mathematical Statistics" Books & Allied (P) Ltd.