Choice Based Credit System Syllabus
M. Com. Part-I (Semester – I)
ADVANCED STATISTICS
Paper I
(Statistical Models For Business Decisions –I)

(w.e.f. June 2015-16)

Periods

Unit-1: Matrix Algebra :- **(15)**

Definition of a matrix, types of matrices, addition, subtraction, multiplication of matrices, inverse of matrix. Rank of Matrix, Determinant. Finding value of determinant. Solving the linear homogeneous and non-homogeneous system of equations by matrix method. Cramer's rule (for not more than three variables)

Unit-2: Introduction to Operations Research (O.R.): **(15)**

Origin, development definitions and applications of O.R. phases of O.R. Mathematical formulation of L.P.P., Solution by Graphical Method.

Unit-3: Linear Programming Problems : **(15)**

Definitions of slack surplus variables. L.P.P. in general form, canonical form and Standard form, definitions of solution, feasible solution, basic feasible solution, optimal solution, degenerate and non-degenerate solution. Simplex Algorithm and example of '<' type of constraints.

Unit-4: Assignment Problem : **(15)**

Definition of A .P. Mathematical formulation of A.P., Reduction Theorem, Assignment algorithm, Unbalanced Assignment Problems, examples on it.

Reference Books :

1 Shantinarayan : Text Book of Matrices

2 S.D. Sharma : Text Book of Linear Programming Problem

3 S.D.Sharma : Operations Research

4 R.K. Gupta : Text Book of Linear Programming

5 Kantiswarup, Gupta Man-Mohan : Operations Research

6 Goel And Mithal : Operations Research

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Choice Based Credit System Syllabus

M. Com. Part-I (Semester – I)
Paper - II
ADVANCED STATISTICS
<u>Design of Experiments</u>

(w.e.f. June 2015-16)

Unit-1: Introduction to the basic terms of designs of Experiments : **(15)**

Experimental Units, Treatments, Randomization, Replications, Local Control, choice of size and shape of plot for uniformity trials.

Analysis of variance :

Analysis of variance for one - way classification : Mathematical model, assumptions basic hypothesis and ANOVA table. Analysis of variance for two -way classification : mathematical model, assumptions basic hypothesis, ANOVA table.

Unit-2: Completely Randomized Design (CRD) : **(15)**

Description, layout, mathematical model, hypothesis, and its analysis of variance, test for equality of treatment effects, ANOVA table.

Unit-3: Randomized Block Design (RBD) : **(15)**

Description, layout, mathematical model, hypothesis, and its analysis of Variance, test for equality of treatment effects, ANOVA table.

Unit-4:Latin square Design (LSD) : **(15)**

Description, layout, Mathematical model ,hypothesis, and its analysis of variance, ANOVA table.

Reference Books:

1 Gupta and Kapoor : Applied Statistics

2 Goon, Gupta & Dasgupta : Fundamentals of Statistics (Vol. I & II)

3 Cochran & Cox : Experimental designs

4 Feherer : Experimental Designs

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Choice Based Credit System Syllabus
M. Com. Part-I (Semester – II)
ADVANCED STATISTICS
Paper I
(Statistical Models For Business Decisions –II)
(w.e.f. June 2015-16)

Unit-1: Transportation Problem (T.P.) : **(15)**

Definition of T.P. mathematical formulation, methods of finding IBFS, Testing IBFS for the Optimality, Unbalanced T.P. Relation between Assignment problem and Transportation problem.

Unit-2: Project Scheduling by CPM/PERT. **(15)**

C P M - Definitions of (i) Event (ii) Activity (iii) Critical Path (iv) Critical Activity (v) Network. Construction of Network, Calculations of ES, LS, EF, LF and project duration. PERT : Definitions of (i) Pessimistic (ii) Most likely (iii) Optimistic time estimates. Calculations of expected time duration and s.d. of it.

Unit-3: Replacement: **(15)**

Introduction of replacement problem, types of replacement problems, replacement policy for items whose maintenance cost increases with time when money value is fixed and money value changes with constant rate, worked examples, replacement of items that fail completely.

Unit-4: Inventory Management: **(15)**

Meaning of Inventory, different costs in Inventory, different types of models, why inventory is maintened? Deterministic Elementary Inventory models. Concept of Economic Ordering Quantity (EOQ), Determination of EOQ by trial and error method, Graphical method. EOQ model without shortages with uniform demand, different rates of demand in different cycles.

Reference Books :

1 S.D. Sharma : Text Book of Linear Programming Problem

2 S.D.Sharma : Operations Research

3 R.K. Gupta : Text Book of Linear Programming

4 Kantiswarup, Gupta Man-Mohan : Operations Research

5 Goel And Mithal : Operations Research

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Choice Based Credit System Syllabus

M. Com. Part-I (Semester – II)
ADVANCED STATISTICS
Paper II
(Sampling Techniques)

(w.e.f. June 2015-16)

Unit-1 : Introduction to sampling :   **(15)**

  Concept of population, sample, sampling error, advantages of sampling and principal steps in sampling, Methods of Sampling.

Unit-2: Simple Random Sampling (SRS):   **(15)**

  S.R.S. with and without replacement, Methods of drawing a sample, properties of the estimates (estimation of population mean and population variance).

Unit-3 :Stratified sampling :   **(15)**

  Description of stratified sampling method, unbiased estimator for population mean and population total, standard error of estimates, problem of allocation; Proportional allocation, optimum allocation.

Unit-4 :Systematic Sampling :   **(15)**

  Situations where systematic sampling is appropriate, Technique of Drawing , Sample using systematic sampling, estimation of Population mean and population total, standard error of these estimates.

Reference Books:

1) Gupta and Kapoor : Applied Statistics

2) Goon, Gupta & Dasgupta : Fundamentals of Statistics (Vol. I & II)

3) Cochran W : Sampling Techniques

4) Des Raj : Sampling theory

5) Daroga & Singg : Sampling Techniques

6) Sukhatme & Sukhatme : Theory of sampling.