

Syllabus of S.Y.B.A. (Statistics) effective from June 2012-13

S.Y. B.A. Semester-III

Paper-V

Unit-I	Sampling Difference between complete census survey & sampling method of survey. Advantages of sample survey method over complete census. Requirement of a good sample. Principle steps in a sample survey Limitations of sampling. Types of sampling methods. Simple random sampling. Selection of simple random sample. Merits & Demerits of simple random sampling. Stratified random sampling Purpose of stratified random sampling. Advantages & disadvantages of stratified random sampling. Examples	40%
Unit-II	Meaning of Analysis of variance. Advantages of Analysis of variance. One way classification and Two way Classification. Examples.	30%
Unit-III	Time series analysis. Meaning of time series. Uses of Time series. Components of Time series. Meaning of trend. Methods of measurement of trend : (i) Graphical method, (ii) Moving average method, (iii) Least Squares method. Merits & demerits of moving average method, Least Squares method. Meaning of seasonal fluctuations Measurement of seasonal fluctuations by method of simple and moving averages. Examples.	30%

**References**

- (1) Cochran, W.G. (1997) : Sampling Techniques  
3<sup>rd</sup> Ed., Wiley Eastern Limited.
- (2) Goon, Gupta      Fundamentals of statistics  
Dasgupta            4<sup>th</sup> Ed., Bhattacharya world press, Calcutta
- (3) S. M. Shah (1976): નિદર્શન પદ્ધતિઓ અને પ્રાયોગિક અભિકલ્પનાઓ.  
2<sup>nd</sup> Ed., Uni. Granthnirman Board, Ahmedabad.
- (4) M.C.Jayswal (1974): Arth Vishayaka Ankdashastra, Univ. Granth  
Nirman Board, Ahmedabad.
- (5) Mukhopadhyay P.(1979): Applied statistics  
Allied Pub. Kolkotta

## S.Y. B.A. Semester-III

### Paper-VI

Unit-I	Demand & supply Meaning of demand & supply. Demand & supply function. Assumptions of demand function. Assumptions of supply function. Graphical representation of demand & supply curve. Market equilibrium. Price elasticity of demand. Interpretation of price elasticity of demand. Price elasticity of supply. Interpretation of price elasticity of supply. Revenue & cost functions. Examples.	40%
Unit-II	Vital statistics. Meaning of vital statistics. Uses of vital statistics. Measurement of Mortality. Crude Death rate, its merits & demerits. Specific death rate, its merits & demerits.	30%
Unit-III	Fertility rates: General fertility rate (GFR), Specified fertility rate (SFR), Total fertility rate (TFR) & its examples. Reproduction rates: Net reproduction rate (NRR), Gross reproduction rate (GRR) & its examples. Life table: Definition, uses, limitations & its examples.	30%

#### **References**

- (1) Allen R.G.D. (1973) : Mathematical Analysis for economics.
- (2) M.C.Jaiswal (1974): Arth Vishayaka Ankdashastra, Univ. Granth Nirman Board, Ahmedabad.
- (3) Handerson & Quandt (1980): Micro economics, Mac –Graw Hills
- (4) D. Gujarati. (1979): Basic Econometrics, Mac- Graw Hills.
- (5) Johnston J. (1982) : Econometric Methods. Mac-Graw Hills
- (6) Goon, Gupta & Das Gupta : Fundamentals of Statistics; Bhattacharya World Press, Calcutta.

## S.Y. B.A. Semester-III

### Paper-VII

Unit-I	Integration Introduction Definition Types of integration (indefinite & definite) Consumer surplus. Examples.	20%
Unit-II	Determinant and Matrix: Determinant: A brief idea of determinant of order two & three. Rules for determinant Solution of linear equations by Cramer's rule Examples. Matrix: Definition of order $m \times n$ matrix Types of matrices Addition & subtraction of matrices Product of two matrices. Transpose of a matrix Adjoint of a matrix. Inverse of a matrix Solution of equations using inverse of a matrix. Examples.	50%
Unit-III	Game theory: Two person zero sum game. Pure strategy Fair game. Rules to determining saddle point. Mixed strategy (game without saddle point.) Rules of dominance. Graphical method for solving game problem. Examples.	30%

#### Reference

- (1) Goon, Gupta      Fundamentals of Statistics.  
Dasgupta.      4<sup>th</sup> Ed., Bhattacharya world press, Calcutta.
- (2) G.C.Patel :      Business Mathematics.  
Atul Prakashan.
- (3) Grant. E. L. (1964)      Statistical Quality control.  
Mac-Graw Hill.
- (4) Kanti Swarup, P.K.Gupta & Man Mohan (1995):  
Operations Research, Sultan Chand & Sons, New Delhi.
- (5) Sharma S.D.(1998): Operations Research,  
Kedar Nath & Sons, Meerut.
- (6) Sharma J.K. (1998): Operations Research,  
Mac Milan Pub. New Delhi.

## S.Y. B.A. Semester-IV

### Paper-VIII

Unit-I	Statistical Quality control. Definition of SQC Variations due to chance causes, variations due to assignable causes. Theory of quality control charts , Theory of runs Advantages of statistical quality control charts. Construction, uses and interpretations of control charts for mean & range. Control charts for proportion of defectives, number of defective items & number of defects per unit. Difference between variable & Attribute charts. Examples.	40%
Unit-II	Single & Double acceptance sampling plans for attributes, concept of producer's & consumer's risk. Ideas of OC curve & ideal OC curve. AOQ curve & interpretation of AOQL from it. ASN & ATI curves. Examples.	30%
Unit-III	Indian Official statistics. Central Statistical Organization (CSO), National Sample Survey Organization (NSSO), Industrial and Agricultural statistics.	30%
<b>References</b>		
(1)	R.T.Ratani	Sankhyikiya Gunvatta Niyantaran (gujarati edition) 2 <sup>nd</sup> Edi., Uni. Granthnirman Board, Ahmedabad.
(2)	E.L.Grant	Statistical quality control 3 <sup>rd</sup> Edi., Tata Mc-GrawHill Com.
(3)	M.C.Jayswal	Arthvishayak ankadashashtra. 3 <sup>rd</sup> Edi., Uni. Granthnirman Board, Ahmedabad.
(4)	D.J. Cowden	Statistical methods in Quality control.
(5)	A.J.Duccan	Quality Control & industrial statistics.

## S.Y. B.A. Semester-IV

### Paper-IX

Unit-I	Operations research (OR) Meaning of OR Scope of OR Phases of OR Meaning of Linear Programming Problem (LPP) Mathematical formulation of LPP Definition of terms: basic solution, feasible solution, basic feasible solution, degenerate basic feasible solution, nondegenerate basic feasible solution, unbounded solution, Optimum solution. Formulation of linear programming problems. Graphical method for solving LPP.	40%
Unit-II	Transportation problem Meaning & formulation of transportation problem. Balanced & unbalanced transportation problem Methods of finding initial BFS of a transportation problem. North west corner, Row minima, Column minima, Matrix minima, Vogel's approximation method (VAM). Optimality test Examples.	30%
Unit-III	Assignment problems. Meaning & mathematical formulation of assignment problem Difference between transportation & assignment problem. Hungarian method for solving assignment problems. Unbalanced assignment problem Maximization & minimization problem. Examples.	30%

#### References

- (1) Paria G. Linear programming, Transportation, Assignment Game Books & Allied Pvt. Ltd. , Calcutta.
- (2) Grant E.L.(1964) Statistical quality control Mac Graw Hills.
- (3) Kanti Swarup P.K. Gupta & Man Mohan (1995) Operation Research, Sultan chand & Sons, New Delhi.
- (4) Sharma S.D. (1998) Operations Research , Kedar Nath & Sons, Meerut.
- (5) Sharma J.K.(1998) Operations Research Mac Milan pub. New Delhi.
- (6) Hadley G. (1995) Linear Programming . Narosa Publishing House , New Delhi.

## S.Y. B.A. Semester-IV

### Paper-X

Unit-I	Equations, inequalities & their applications in economics. Definitions. Types of equations. Linear equations & its uses in economics Simultaneous equations & its uses in economics. Quadratic equations. Inequalities. Examples.	30%
Unit-II	Market Research Meaning of Market Research Scope of Market Research Types of Market Research Procedure of Market Research Limitations of Market Research Applications	30%
Unit-III	Decision theory Meaning of decision theory. Formulation of decision theory. Better decision rule. Admissible decision rule. Decision under risk. EMV rule. EOL EVPI Decision tree. Maximisation & minimisation problem. Examples.	40%

### References

- (1) Moshe B. & Levy H. (1984) Statistical Decision & Application in business.& Economics, Mac Graw Hill
- (2) M.C.Jayswal (1974) : Arth Vishayaka Ankdashastra, Univ. Granth Nirman Board, Ahmedabad.
- (3) J.C. Shah : Statistics, Bharat Prakashan, Ahmedabad.