

DEPARTMENT OF COMMERCE				CLASS: I B.Com (General, PA, B&I, CM)				
Semester	Course Type	Course Code	Course Title	Credits	Contact Hours/week	CIA	Ext	Total
II	Major core 4	20U2KMC4	<i>Business Mathematics & Statistics</i>	4	6	25	75	100

Course Objectives

<ul style="list-style-type: none"> • To acquaint knowledge with the familiarity with the number system, ratios, proportion, indices and surds and to equip in calculating simple interest, compound interest, EMI and annuity payments. • To solve problems relating to matrices and determinants and to calculate summation of series through AP& GP • To gain knowledge on the concept of statistics, graphical and diagrammatic presentation of business • To acquire skills on application of averages and measures of dispersion in business • To acquire skills towards solving problems in time series analysis and Index numbers

Unit	Course Contents	Hours
I	<p>Number System, Ratios & Indices Development of number system Operations on Numbers – Development of number system – Natural number – Integers – Rational and Irrational numbers – Imaginary numbers – Complex numbers. Ratios and Proportions-Theory of Indices and Surds - Logarithms.</p> <p>Commercial Arithmetic Interest and Annuities - Simple and Compound Interest - Rule 72 – EMI – Annuity - Future value - Present value - Sinking fund.</p>	18
II	<p>Matrices and Determinants Solving Equations using Crammers Rule and Matrix Inversion only - Permutations and Combinations - Progressions - Arithmetic and Geometric.</p>	18
III	<p>Introduction to Statistics Definition – Functions - Collection, Classification, Tabulation and Presentation of Data - Frequency Distribution - Graphical and Diagrammatic Presentation – Histogram - Frequency Polygon – Ogive - Bar and Pie Diagram.</p>	18
IV	<p>Measures of Central Tendency and Dispersion Mean – Meaning – Definition – Arithmetic Mean, Geometric Mean & Harmonic Mean – Combined Mean - Median, Quartiles, Deciles and Percentiles – Mode (Uni and Bi Model) - Measures of Dispersion – Range - Standard Deviation - Combined Standard Deviation - Coefficient of Variation.</p>	18
V	<p>Index Numbers and Analysis of Time series Index Numbers – Meaning – Types – Definition - Methods - Tests of consistency of Index number (Time reversal & Factor reversal test) - Cost of Living Index – Chain Base – Fixed Base – Base shifting. Analysis of Time Series – Meaning – Definition - Models - Method of Least Square and Moving Average.</p>	18

Note: The Questions should be asked in the ratio of 80% Problems and 20 % Theory

Books for Study

1. C.K. Ranganath, C.S. Sampagiram and Y. Rajaram, *“Business Mathematics”*, Third Edition, 2014, Himalaya Publishing House, Mumbai.
2. RSN. Pillai & Bagavathi, *“Business Statistics”*, Eight Edition, 2016, S.Chand& Co Pvt., Ltd., New Delhi.

Books for Reference

1. QaziZameeruddin, Vijay K Khanna& S.K. Bhambri, *“Business Mathematics”*, Second Edition, 2015, Vikas Publishing House Pvt Ltd.
2. V. Sundaresan and S.D.Jeyaseelan, *“An Introduction to Business Mathematics”*, 2010, S.Chand (G/L) & Company Ltd.
3. S.P. Gupta, *“Statistical Methods”*, Forty Fourth Edition, 2014, Sultan Chand & Sons, New Delhi.
4. S.C. Gupta & V.K. Kapoor, *“Fundamentals of Mathematical Statistics”*, 2014, Sultan Chand & Sons, New Delhi.

Pedagogy: Chalk & Talk, Assignments, Exercises, PPT

Course Learning Outcomes:

CLOs	On completion of the course, the students should be able to	K- Level
CLO 1	Relate various number systems Working knowledge on ratios, proportion, indices and surds. Estimate the time value of money through interest and annuities	Up to K2
CLO 2	Estimate sum of the series by AP, GP and in solving the problems relating to matrices and determinants	Up to K3
CLO 3	Describe the concept of statistics and its applicability Illustrate data through diagrammatical and graphical presentation	Up to K2
CLO 4	Distinguish various types of averages and relate with measures of dispersion	Up to K3
CLO 5	Categorize price, quantity index with time and factor reversal test and Cost of Living Index and illustrate time series analysis	Up to K4

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

Course Learning Outcomes (CLOs)	Programme Specific Outcomes (with Graduate Attributes)					
	PO 1 (Knowledge Base)	PO 2 (Problem Analysis & Investigation)	PO 3 (Communication Skills & Design)	PO 4 (Individual and Team Work)	PO 5 (Professionalism, Ethics and equity)	PO 6 (Life Long Learning)
CLO 1	3	1	3	2	2	3
CLO 2	3	2	3	2	2	3
CLO 3	3	2	3	3	3	3
CLO 4	2	1	3	1	2	2
CLO 5	3	2	3	2	2	3

3- Advanced Application

2- Intermediate Development

1- Introductory

Mapping of Course Learning Outcomes (CLOs) with Programme Specific Outcomes (PSOs)

Course Learning Outcomes (CLOs)	Programme Specific Outcomes (with Graduate Attributes)					
	PSO 1 (Knowledge Base)	PSO 2 (Problem Analysis & Investigation)	PSO 3 (Communication Skills & Design)	PSO 4 (Individual and Team Work)	PSO 5 (Professionalism, Ethics and equity)	PSO 6 (Life Long Learning)
CLO 1	3	1	3	2	2	3
CLO 2	3	2	3	2	2	3
CLO 3	3	2	3	3	3	3
CLO 4	2	1	3	1	2	2
CLO 5	3	2	3	2	2	3

3- Advanced Application 2- Intermediate Development 1- Introductory

LESSON PLAN

Unit	Course Contents	Hrs	Mode of Teaching
I	Number System, Ratios & Indices Development of number system Operations on Numbers - Development of number system – Natural number - Integers – Rational and Irrational numbers - Imaginary numbers – Complex numbers	6	Chalk and Talk Exercise
	Ratios and Proportions	6	
	Theory of Indices and Surds, Logarithms, Interest and Annuities - Simple and Compound Interest - Rule 72 – EMI – Annuity - Future value - Present value - Sinking fund.	6	
II	Matrices and Determinants Solving Equations using Crammers Rule and Matrix Inversion only Permutations and Combinations	6	Chalk and Talk Exercise Assignment
	Progression, Arithmetic and Geometric.	6	
III	Introduction to Statistics Definition – Functions - Collection, Classification, Tabulation and Presentation of Data - Frequency Distribution	6	Chalk and Talk Exercise
	Graphical and Diagrammatic Presentation – Histogram Frequency Polygon – Ogive - Bar and Pie Diagram.	6	
IV	Measures of Central Tendency Mean – Meaning – Definition – Arithmetic Mean, Geometric Mean	6	Chalk and Talk Exercise
	Harmonic Mean – Combined Mean - Median	6	
	Quartiles, Deciles and Percentiles – Mode (Uni and Bi Model)	6	
	Measures of Dispersion – Range - Standard Deviation - Combined Standard Deviation - Coefficient of Variation.	6	
V	Index Numbers and Analysis of Time series Index Numbers – Meaning – Types – Definition - Methods -	6	Chalk & Talk, Exercise Assignment
	Tests of consistency of Index number (Time reversal & Factor reversal test) Cost of Living Index – Chain Base – Fixed Base – Base shifting.	6	
	Analysis of Time Series – Meaning – Definition - Models - Method of Least Square and Moving Average.	6	

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