PAPER

3

FOUNDATION COURSE

STUDY MATERIAL

QUANTITATIVE APTITUDE

Board of Studies (Academic)
The Institute of Chartered Accountants of India
(Set up by an Act of Parliament)

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Edition	:	April, 2023
Committee/Department	:	Board of Studies (Academic)
E-mail	:	bosnoida@icai.in
Website	:	www.icai.org
Price	:	₹ /-
ISBN No.	:	978-81-962488-4-0
Published by	:	The Publication & CDS Directorate on behalf of The Institute of Chartered Accountants of India ICAI Bhawan, Post Box No. 7100, Indraprastha Marg, New Delhi – 110002 (India)
Printed by	:	

BEFORE WE BEGIN

The contents of the study material for Foundation have been designed and developed by the Board of Studies (Academic), ICAI with an objective to synchronize the syllabus with the International Education Standards (IESs) of IFAC (International Federation of Accountants) to instill and enhance the necessary pre-requisites for becoming a well-rounded, competent and globally competitive Accounting Professional.

This study material also lays emphasis on NEP 2020 initiatives like conceptual clarity rather than rote learning and new pedagogical and curriculum restructuring based on the use of technology while teaching.

The requirements of "IES 1 Entry Level Requirements" have been kept in mind while developing the different chapters of study material.

The subject "Quantitative Aptitude" has been designed specifically for the students who are aiming pursue CA course, keeping in view the relevance of subjects after they become full-fledged professional. Mathematics and Statistics applications are very important for the students of Chartered Accountancy Course as professional work in future will demand quantitative and analytical skills. Through this section, students will be able to understand the basic mathematical and statistical tools and apply the same in business, finance and economics situations. Logical Reasoning has been included to test analytical and mental ability skills which will help them in honing their interpretative skills while pursuing and thereafter CA course.

Through these chapters of Quantitate Aptitude, students will be equipped with the knowledge to absorb various concepts of other subjects of the chartered accountancy course like accounting, auditing and assurance, financial management, cost and management accounting, strategic cost management, etc.

The Study material Quantitative Aptitude is divided into three parts, the first part of the study material (Chapters 1-8) covers basic application mathematical techniques like ratio, proportion, indices, logarithms, equations and linear inequalities, time value of money, permutations and combinations, sequence and series, sets, relations and basic applications of differential and integral calculus in economics and business. The second part of the study material (Chapters 9-12) covers Logical Reasoning and the third part (Chapters 13-18) of the basic principles of statistical techniques and measurement thereof.

The entire study material Quantitative Aptitude has been written in a simple and easy to understand language. Every concept has been explained with the help of solved examples. A number of illustrations have been incorporated in each chapter to explain various concepts and related computational techniques dealt within each chapter. The diagrams have been drawn neatly in a such way that the students have the complete understanding of the problem by perusing them. This entire paper is tested on multiple choice questions or objective type of questions pattern only. Keeping in view the examination pattern, a reasonably good question bank has been included in the study material which will help the students to prepare for the Foundation examination.

Happy Reading and Best Wishes!

SYLLABUS

PAPER – 3: QUANTITATIVE APTITUDE

(One paper – Two hours – 100 Marks)

Objectives:

(a) To develop an understanding of the basic mathematical and statistical tools and their application in Business, Finance and Economics.

(b) To develop logical reasoning skills and apply the same in simple problem solving.

Contents:

PART – A BUSINESS MATHEMATICS (40 MARKS)

1. Ratio and Proportion, Indices and Logarithms

Ratio and Proportion (Business Applications), Laws of Indices, Exponents and Logarithms and Anti Logarithms.

2. Equations

Simultaneous linear equations up to three variables, Quadratic and Cubic equations in one variable.

3. Linear Inequalities with Objective Functions and Optimization w r t objective function

4. Mathematics of Finance

(i) Simple Interest

(ii) Compound interest

(iii) Depreciation

(iv) Effective Rate of Interest

(v) Present Value

(vi) Net Present Value

(vii) Future Value (viii) Perpetuity (ix) Annuities

(x) Sinking Funds

(xi) Valuation of Bonds

(xii)Calculating of EMI

(xiii) Calculations of Returns:

(a) Nominal Rate of Return

(b) Effective Rate of Return

(c) Compound Annual Growth Rate (CAGR)

5. Permutations and Combinations

Basic concepts of Permutations and Combinations: Introduction, the Factorial, Permutations, results, Circular Permutations, Permutations with restrictions, Combinations with standard results.

6. Sequence and Series

Introduction Sequences, Series, Arithmetic and Geometric progression, Relationship between AM and GM and Sum of n terms of special series.

7. Sets, Relations and Functions and Basics of Limits and Continuity functions

8. Basic applications of Differential and Integral calculus in Business and Economics (Excluding the trigonometric applications)

PART – B: LOGICAL REASONING (20 MARKS)

1. Number series, Coding and Decoding and odd man out
2. Direction Tests
3. Seating Arrangements
4. Blood Relations

PART – C: STATISTICS (40 MARKS)

1. Unit: I Statistical Description of Data

Statistical Representation of Data, Diagrammatic representation of data, Frequency distribution, Graphical representation of Frequency Distribution – Histogram, Frequency Polygon, Ogive, Pie-chart.

Unit: II Sampling: Basic principles of sampling theory, comparison between sample survey and complete enumeration, some important terms associated sampling types of sampling, sampling and non-sampling errors.

2. Measures of Central tendency and Dispersion

Measures of Central Tendency and Dispersion: Mean Median, Mode, Mean Deviation, Quartiles and Quartile Deviation, Standard Deviation, Co-efficient of Variation, Coefficient of Quartile Deviation.

3. Probability

Probability: Independent and dependent events; mutually exclusive events Total and Compound Probability and Mathematical Expectation.

4. Theoretical Distributions

Theoretical Distributions: Binomial Distribution, Poisson distribution – Basic application and Normal Distribution – Basic applications.

5. Correlation and Regression

Correlation and Regression: Scatter diagram, Karl Pearson's Coefficient of Correlation Rank Correlation Regression lines, Regression equations, Regression coefficients.

6. Index Numbers

Uses of Index Numbers, Problems involved in construction of Index Numbers, Methods of construction of Index Numbers. BSE SENSEX and NSE.

CONTENTS

PART – A : BUSINESS MATHEMATICS

Chapter-7: Sets, Relations and Functions, Basics of Limits and Continuity functions

Chapter-8: Basic applications of Differential and Integral calculus in Business and Economics
(A) Differential Calculus

Unit: II Sampling

Chapter-14: Measures of Central Tendency and Dispersion

Unit I : Measures of Central Tendency

Unit II: Dispersion

Chapter- 18: Index Numbers