Course Title : Quantitative Aptitude and Reasoning - I

Audited program

II/IV BTech Sem 1- All branches

COURSE OBJECTIVES:

After thorough learning of **Quantitative Aptitude** and **Reasoning**, a student:

1. Will be able to critically evaluate various real life situations by resorting to Analysis of key issues and factors.
2. Will be able to read between the lines and understand various language structures..
3. Will be able to demonstrate various principles involved in solving mathematical problems and thereby reducing the time taken for performing job functions.

Syllabus for Quantitative Aptitude

Competency 1: Simple equations, Ratio, Proportion, Variation, Percentages,

Simple equations

- Definition of Linear Equations
- Formation of simple equations
- Problems on Ages, Fractions and Digits
- Indeterminate system of equations
- Special cases in indeterminate system of equations

Ratio and proportion

- Definition of Ratio
- Properties of Ratios
- Comparison of Ratios
- Problems on Ratios
- Compound Ratio
- Problems on Proportion, Mean proportional and Continued Proportion

Variation

- Direct variation
- Inverse variation
- Joint variation
- Problems on Variations

Competency 2: Percentages, **Profit and loss, Partnership, Simple interest and Compound interest, Quadratic equations, progressions**

Percentages

- Introduction
- Converting a percentage into decimals
- Converting a Decimal into a percentage
- Percentage equivalent of fractions
- Problems on percentages

Profit And Loss

- Problems on Profit and Loss percentage
- Relation between Cost Price and Selling price
- Discount and Marked Price
- Two different articles sold at same Cost Price
- Two different articles sold at same Selling Price
- Gain% / Loss% on Selling Price

Partnership

- Introduction
- Relation between capitals, Period of investments and Shares

Simple Interest

- Definitions
- Problems on interest and amount
- Problems when rate of interest and time period are numerically equal

Compound Interest

- Definition and formula for amount in compound interest
- Difference between simple interest and compound interest for 2 years on the same principle and time period.

Quadratic equations

- General form of Quadratic equations
- Finding the roots of Quadratic equations
- Nature of the roots
- Relation between the roots
- Maximum and minimum value of Quadratic Expression

Progressions

- Arithmetic Progression
- Geometric Progression
- Harmonic Progression
- Arithmetic Mean, Geometric Mean and Harmonic Mean and their relation.

Syllabus for Reasoning

Competency 3:

Deductions

- Finding the conclusions using Venn diagram method
- Finding the conclusions using syllogism method

Connectives

- Definition of a simple statement
- Definition of compound statement
- Finding the Implications for compound statements
- Finding the Negations for compound statements

Competency 4:

Analytical Reasoning puzzles

- Problems on Linear arrangement
- Problems on Circular arrangement
- Problems on Double line-up
- Problems on Selections

- Problems on Comparisions

Competency 5:

Clocks

- Finding the angle when the time is given
- Finding the time when the angle is known
- Relation between Angle, Minutes and Hours
- Exceptional cases in clocks

Calendars

- Definition of a Leap Year
- Finding the number of Odd days
- Framing the year code for centuries
- Finding the day of any random calendar date

Blood relations

- Defining the various relations among the members of a family
- Solving Blood Relation puzzles
- Solving the problems on Blood Relations using symbols and notations

TEXT BOOKS:

1. GL Barrons, Mc Graw Hills, Thorpe's verbal reasoning, LSAT Materials
2. R S Agarwal, S.Chand , 'A modern approach to Logical reasoning'
3. R S Agarwal, S Chand, 'Quantitative Aptitude'
4. Quantitative Aptitude - G. L BARRONS
5. Quantitative Aptitude - Abhijit Guha Mc Graw Hills

Course Title :Quantitative Aptitude and Reasoning - II

Audited program

II/IV BTech Sem 2- All branches

COURSE OBJECTIVES :

After thorough learning of **Quantitative Aptitude** and **Reasoning**, a student:

1. Will be able to critically evaluate various real life situations by resorting to Analysis of key issues and factors.
2. Will be able to read between the lines and understand various language structures..
3. Will be able to demonstrate various principles involved in solving mathematical problems and thereby reducing the time taken for performing job functions.

Syllabus for Quantitative Aptitude

Competency 1:

Numbers

- Classification of numbers
- Divisibility rules
- Finding the units digit
- Finding remainders in divisions involving higher powers
- LCM and HCF Models

Time and Distance

- Relation between speed, distance and time
- Converting kmph into m/s and vice versa
- Problems on average speed
- Problems on relative speed
- Problems on trains
- Problems on boats and streams
- Problems on circular tracks
- Problems on races

Time and Work

- Problems on Unitary method
- Relation between Men, Days, Hours and Work
- Problems on Man-Day-Hours method
- Problems on alternate days
- Problems on Pipes and Cisterns

Averages, Mixtures and Allegations

- Definition of Average
- Rules of Average
- Problems on Average
- Problems on Weighted Average
- Finding average using assumed mean method
- Problems on mixtures
- Allegation rule
- Problems on Allegation

Competency 2:

Data Interpretation

- Problems on tabular form
- Problems on Line Graphs
- Problems on Bar Graphs
- Problems on Pie Charts

Data Sufficiency

- Different models in Data Sufficiency
- Problems on data redundancy

Mensuration

- Formulas for Areas
- Formulas for Volumes of different solids
- Problems on Areas
- Problems on Volumes
- Problems on Surface Areas

Permutation and Combinations

- Definition of permutation
- Problems on Permutations
- Definition of Combinations
- Problems on Combinations

Probability

- Definition of Probability
- Problems on coins
- Problems on dice
- Problems on Deck of cards
- Problems on Years

Syllabus for REASONING

Competency 3:

Cubes

- Basics of a cube
- Formulae for finding volume and surface area of a cube
- Finding the minimum number of cuts when the number of identical pieces are given
- Finding the maximum number of pieces when cuts are given
- Problems on painted cubes of same and different colors
- Problems on cuboids
- Problems on painted cuboids
- Problems on diagonal cuts

Venn diagrams

- Representing the given data in the form of a Venn diagram
- Problems on Venn diagrams with two sets
- Problems on Venn diagrams with three sets
- Problems on Venn diagrams with four sets

Binary Logic

- Definition of a truth-teller
- Definition of a liar
- Definition of an alternator
- Solving problems using method of assumptions
- Solving analytical puzzles using binary logic

Competency 4:

Number and letter series

- Difference series
- Product series
- Squares series
- Cubes series

- Alternate series
- Combination series
- Miscellaneous series
- Place values of letters

Number and Letter Analogies

- Definition of Analogy
- Problems on number analogy
- Problems on letter analogy
- Problems on verbal analogy

Odd man out

- Problems on number Odd man out
- Problems on letter Odd man out
- Problems on verbal Odd man out

Competency 5:

Coding and decoding

- Coding using same set of letters
- Coding using different set of letters
- Coding into a number
- Problems on R-model

Direction sense

- Solving problems by drawing the paths
- Finding the net distance travelled
- Finding the direction
- Problems on clocks
- Problems on shadows
- Problems on damaged compass
- Problems on direction sense using symbols and notations

]

Critical Reasoning

- Problems on assumption
- Problems on conclusions
- Problems on inferences
- Problems on strengthening and weakening of arguments
- Problems on principle
- Problems on paradox

Lateral reasoning puzzle

- Problems on common balance
- Problems on digital balance
- Problems on coins
- Problems on lockers
- Problems on heights
- Digit puzzles using basic arithmetic operations

TEXT BOOKS:

6. GL Barrons, Mc Graw Hills, Thorpe's verbal reasoning, LSAT Materials
7. R S Agarwal, S.Chand , 'A modern approach to Logical reasoning'
8. R S Agarwal, S Chand, 'Quantitative Aptitude'
9. Quantitative Aptitude - G. L BARRONS
10. Quantitative Aptitude - Abhijit Guha Mc Graw Hills