**Multidisciplinary Courses in Mathematics to be opted by the students who did not studied Mathematics at their secondary level:**

| Course Code | Title of the course | Max. Marks | | | | Credits (L:T:P) |
|---|---|---|---|---|---|---|
| | | Theory | Internal Assessment | Practical | Total Marks | |
| **Multidisciplinary Courses** | | | | | | |
| **Semester - I** | | | | | | |
| **24MATX01MD01** | Introductory Mathematics | 50 | 25 | -- | 75 | 2 : 1 : 0 |
| **Semester - II** | | | | | | |
| **24MATX02MD01** | Mathematical Reasoning | 50 | 25 | -- | 75 | 2 : 1 : 0 |
| **Semester - III** | | | | | | |
| **25MATX03MD01** | Applicable Mathematics | 50 | 25 | -- | 75 | 2 : 1 : 0 |

# Introductory Mathematics

**Code: 24MATX01MD01**

**Credits: 2:1:0 (L:T:P)**
**(Theory: 2 hours/ 3 periods per Week)**
**(Tutorials 1 hours/1 periods per Week)**
**Max. Marks (Theory) : 50**
**Internal Marks (Theory) : 25**
**Practical Exam Marks :Nil**

**Course Outcomes**

Students would be able to:

**CO1** Obtain various properties related to numbers**.**
**CO2** Solve problems related to Profit, Loss and ages.
**CO3** Use the concept time and work, distance and solve calendar based problems.

**Note.** The question paper will consist of four sections. Each of the first three sections (*I-III*) will contain two questions and the students shall be asked to attempt one question from each section. Section – IV (Question No. 7) will contain three short answer type questions without any internal choice covering the entire syllabus and shall be compulsory.

**Section – I**

Numbers, H.C.F. and L.C.M. of Numbers, Decimal and Fractions, Simplification, Square roots and cube roots, Surds and indices, Problems on numbers.

**Section – II**

Average, Percentage, Profit and Loss, Ratio and proportion, Problem on ages, Partnership.

**Section – III**

Time and work, Time and distance, Problems on trains, Mixure problem, Problems based on Calendar and clock.

**Book Recommended:**


1. Aggarwal, R.S., Quantitative aptitude for Competitive exams, S. Chand Co. Pvt. Ltd., New Delhi, Eighth edition, 2017.
2. Guha, A., Quantitative aptitude for Competitive exams, McCraw Hill

# Mathematical Reasoning

**Code: 24MATX02MD01**

**Credits: 2:1:0 (L:T:P)**
**(Theory: 2 hours/ 3 periods per Week)**
**(Tutorials 1 hours/1 periods per Week)**
**Max. Marks (Theory) : 50**
**Internal Marks (Theory) : 25**
**Practical Exam Marks :Nil**

**Course Outcomes**

Students would be able to:

**CO1** Solve problems related to coding-decoding**.**
**CO2** Handle various mathematical and logical operations.
**CO3** Read and use various graphs and diagrams.

**Note.** The question paper will consist of four sections. Each of the first three sections (*I-III*) will contain two questions and the students shall be asked to attempt one question from each section. Section – IV (Question No. 7) will contain three short answer type questions without any internal choice covering the entire syllabus and shall be compulsory.

**Section – I**

Analogy, Classification, Series Completion, Coding-Decoding, Blood relation, Puzzle Test, Sequential output tracing, Logical Venn Diagram.

**Section – II**

Alphabet Test, Number, Ranking and Time sequence test, Mathematical operation, Logical sequence and Word, Arithmetical Reasoning.

**Section – III**

**Data Interpolation and Reasoning:** Tabulation, Bar Graphs, Line Graphs, Pie Chart, Venn Diagrams, Analytical Reasoning, Mirror images.

**Books Recommended:**


1. Aggarwal, R.S., A Modern Approach to Verbal and Non-Verbal Reasoning, S. Chand Co. Pvt. Ltd., New Delhi, Revised Edition, 2018.
2. Sundstrom, T., Mathematical Reasoning, Writing and Proof, Version 2.1, Sundstrom2-1.pdf (sc.edu)

# Applicable Mathematics

**Code : 25MATX03MD01**

**Credits: 2:1:0 (L:T:P)**
**(Theory: 2 hours/ 3 periods per Week)**
**(Tutorials 1 hours/1 periods per Week)**
**Max. Marks (Theory) : 50**
**Internal Marks (Theory) : 25**
**Practical Exam Marks : Nil**

**Course Outcomes**

Students would be able to:

**CO1** Determine the type of matrices and compute the elementary operations on the matrices**.**
**CO2** Solve problems related to interest and annuities.
**CO3** Use sets and Venn diagrams to solve many problems related to various types of data.

**Note.** The question paper will consist of four sections. Each of the first three sections (*I-III*) will contain two questions and the students shall be asked to attempt one question from each section. Section – IV (Question No. 7) will contain three short answer type questions without any internal choice covering the entire syllabus and shall be compulsory.

**Section - I**

Theory of Sets: Meaning, elements, types, presentation and equality of Sets, Union, Intersection, Complement and Difference of Sets, Venn Diagram, Cartesian Product of two Sets, Applications of Set Theory.

**Section - II**

Matrices and Determinants: Definition of a Matrix ; Types of Matrices, Algebra of Matrices; Properties of determinants; Calculation of values of Determinants upto third order; adjoint of a Matrix, elementary row and column operations; Finding inverse matrix through adjoint; Solution of a system of Linear equations having unique Solution and involving not more than three variables.

**Section - III**

Compound Interest and Annuities: Certain different types of interest rate; Concept of present value and amount of a sum; Types of annuities; Present value and amount of an annuity, including the case of continuous compounding.

**Books Recommended:**

1. Allen B.G.D: Basic Mathematics; Mcmillan, New Delhi.

2. Volra. N. D. Quantitative Techniques in Management, Tata McGraw Hill, New Delhi.

3. Kapoor V.K. Business Mathematics: Sultan chand and sons, Delhi.

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