

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

Scheme and Curriculum of Examinations of Two Year Degree Programme

(Under Credit Based Continuous Evaluation Grading System) (CBCEGS)

**MASTER OF COMPUTER APPLICATIONS**

Two Year Degree Programme  
Semester-I

Session: 2026-27

| MASTER OF COMPUTER APPLICATIONS |                                       |             |                      |               |               |       |      |    |    |                             |
|---------------------------------|---------------------------------------|-------------|----------------------|---------------|---------------|-------|------|----|----|-----------------------------|
| Semester-I                      |                                       |             |                      |               |               |       |      |    |    |                             |
| Course Code                     | Course Title                          | Course Type | Hours per week L-T-P | Credits L-T-P | Total Credits | Marks |      |    |    | Examination Time (in Hours) |
|                                 |                                       |             |                      |               |               | Total | Ext. |    | CA |                             |
|                                 |                                       |             |                      |               |               |       | Th   | P  |    |                             |
| MCAL-1131                       | Fundamental Mathematics for Computing | B           | 2-0-0                | 2-0-0         | 2             | 50    | 35   | -- | 15 | 3                           |

**MASTER OF COMPUTER APPLICATIONS (SEMESTER – I)**

**(Two Year Degree Programme) (CBCEGS)**

**(Session 2026-27)**

**COURSE TITLE: Fundamental Mathematics for Computing**

**COURSE CODE: MCAL-1131**

**Course Outcomes:**

CO1: Demonstrate an understanding of fundamental concepts of set theory and perform set operations to solve problems relevant to computing applications.

CO2: Apply the principles of mathematical logic, logical connectives, equivalence, tautologies, and contradictions to analyze and construct logical arguments.

CO3: Perform matrix operations, including addition, multiplication, transpose, and scalar multiplication, and apply matrices to solve computational and mathematical problems.

CO4: Compute determinants, adjoints, and inverses of matrices, and solve systems of linear equations using determinant-based methods.

**MASTER OF COMPUTER APPLICATIONS (SEMESTER – I)**

**(Two Year Degree Programme) (CBCEGS)**

**(Session 2026-27)**

**COURSE TITLE: Fundamental Mathematics for Computing**

**COURSE CODE: MCAL-1131**

**L-T-P: 2-0-0**

**Theory: 35**

**Examination Time : 3Hrs.**

**Instructions for Paper Setter - Eight questions of equal marks (7 Marks each) are to set, two in each of the four sections (A- D). Questions of sub-sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.**

**Unit-I**

**SET THEORY:** Set Introduction, Representation of Sets (Roster Method, Set Builder Method), Types of Sets (Null Set, Singleton Set, Finite Set, Infinite Set, Equal Set, Equivalent Set, Disjoint Set, Subset, Proper Subset, Power Set, Universal Set) and Operation with Sets (Union of Set, Intersection of Set, Difference of Set, Symmetric Difference of Set) Universal Sets, Complement of a Set.

**UNIT-II**

**MATHEMATICAL LOGIC:** Logic Statement, Connectives, Basic Logic Operations (Conjunction, Disjunction, Negation), Logical Equivalence/Equivalent Statements, Tautologies and Contradictions.

**UNIT-III**

**MATRICES:** Matrix Introduction, Types of Matrices (Row Matrix, Column Matrix, Rectangular Matrix, Square Matrix, Diagonal Matrix, Scalar Matrix, Unit Matrix, Null Matrix, Comparable Matrix, Equal Matrix, Scalar Multiplication, Negative of Matrix, Addition of Matrix, Difference of two Matrix, Multiplication of Matrices, Transpose of a Matrix.

**UNIT-IV**

**DETERMINANT:** Determinant, Minor, Cofactor, Adjoint of a matrix, Inverse of a matrix, Solution of System of Linear equations using determinants.

**Text Books**

1. Discrete Mathematics and Its Applications by Kenneth H. Rosen, Mc Graw Hill, 6th Edition.

2. College Mathematics, Schaum's Series, TMH. 2. Kolman B., Busby R. and Ross S., Discrete Mathematical Structures, 6th Edition, Pearson Education, 2015.

3. Deo Narsingh, Graph Theory with Application to Engineering and Computer Science, Prentice Hall, India, 1979. 4. Vasishtha A. R. and Vasishtha A. K., Matrices, Krishna Prakashan, 2022.

**Reference Books:**

1. Discrete Mathematics and its applications, Kenneth H. Rosen, (Fifth Edition), Tata McGraw Hill Publishing Company.

2. Theory and Problems of Discrete Mathematics, Semmour Lipschutz, Marc Lipson, Second Edition, Schaum's Outline, T.M.H

3. Elementary Mathematics, Dr. RD Sharma 4. Comprehensive Mathematics, Parmanand Gupta