ST. ALOYSIUS (AUTO) COLLEGE, JABALPUR

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE

Basics of Mathematics for Computation

S. No.	Title	Maximum Marks	Minimum Marks
I	Theory	100	40

Note: Total duration of the course is 30 contact hours.

ST. ALOYSIUS (AUTO) COLLEGE, JABALPUR

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE

Basics of Mathematics for Computation

Maximum Marks: 100

Minimum Marks: 40

Time: 2 hours

MODULE I: System of Linear Equations in two unknowns, word problems, Solution by Substitution, Elimination and Cross Multiplication Method.

MODULE II: Introduction to Matrices, Equal and Equivalent Matrices, Elementary transformation on Matrices, Matrix representation of a system of Linear Equations of n unknowns and solution by Matrix method. (n ≤ 5).

MODULE III: Logarithm and Antilogarithm, Characteristic, Mantissa. Log & Antilog tables

REFERENCES:-

1. Business Mathematics: by Dr. Alok Gupta, SBPD publications.
2. Algebra and Trigonometry by Dr. H.K. Pathak, Sahitya Prakashan.

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DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE

VEDIC MATHEMATICS

S. No.	Title	Maximum Marks	Minimum Marks
I	Theory	100	40

Note: Total duration of the course is 30 contact hours.

ST. ALOYSIUS (AUTO) COLLEGE, JABALPUR

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE

VEDIC MATHEMATICS

Maximum Marks: 100   Time: 2 hours

Minimum Marks: 40

MODULE I – Multiplication

1. Ekadhikenpurven method (multiplication of two numbers of two digits)

2. Eknunenpurven method (multiplication of two numbers of three digits)

3. Urdhvatiragbhyam method (multiplication of two numbers of three digits)

4. Nikhilam Navtashchramam Dashtaha (multiplication of two numbers of three digits)

5. Combined Operations

MODULE II – Division and Divisibility

Part A: Division

1. Nikhilam Navtashchramam Dashtaha (two digits divisor)

2. Paravartya Yojyet method (three digits divisor)

Part B: Divisibility

1. Ekadhikenpurven method (two digits divisor)

2. Eknunenpurven method (two digits divisor)

MODULE III – Power and Root

Power: (i) Square (two digit numbers), (ii) Cube (two digit numbers).
Root: (i) Square root (four digit number) (ii) Cube root (six digit numbers)

REFERENCES:-

1. Vedic Mathematics, *Motilal Banarsi Das, New Delhi.*

2. Vedic Ganita: Vihangama Drishti-1, *Siksha Sanskriti Uthana Nyasa, New Delhi.*

3. Vedic Ganita Praneta, *Siksha Sanskriti Uthana Nyasa, New Delhi.*

4. Vedic Mathematics: Past, Present and Future, *Siksha Sanskriti Uthana Nyasa, New Delhi.*

ST. ALOYSIUS COLLEGE (AUTO), JABALPUR
DEPARTMENT OF MATHEMATICS
CERTIFICATE COURSE
BASICS OF MATLAB-THEORY

Maximum Marks: 50   Time: 2 hours

Minimum Marks: 20

MODULE I- Input output of data from Matlab command. File types. Creating, saving and executing the script file. Creating and executing functions file.

MODULEII- Working with files and directories. Matrix manipulation. Creating vectors.Arithmetic operations. Relational operations. Logical operations. Matrix functions. Determinant of Matrix.

MODULE III -Graphics: Two and three dimensional plot.

REFERENCE BOOKS:-

1. RudraPratap, Getting Started with MATAB: A Quick Introduction for Scientists and Engineers. Oxford University Press.

2. Stormy Attaway, MATLAB: A Practical Approach, Butterwarth-Heinemann Publications,USA.

ST. ALOYSIUS COLLEGE (AUTO), JABALPUR

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE

BASICS OF MATLAB-PRACTICAL

Maximum Marks: 50   Time: 2 hours

Minimum Marks: 20

List of Practicals:

1. WAP in MATLAB for multiplication of matrices.
2. WAP in MATLAB for the inverse of a matrix.
3. WAP in MATLAB for Determinant of Matrix.
4. WAP in MATLAB for the average of finite numbers.
5. WAP in MATLAB using "if else if" statement.
6. WAP in MATLAB for plotting graphs of trigonometric functions.

ST. ALOYSIUS (AUTO) COLLEGE, JABALPUR
DEPARTMENT OF MATHEMATICS
CERTIFICATE COURSE
BASICS OF MATLAB

Paper	Title	Maximum Marks	Minimum Marks
I	Basics of MATLAB-Theory	50	20
II	Basics of MATLAB-Practical	50	20

Note: Total duration of the course is 30 contact hours.

ST. ALOYSIUS (AUTO) COLLEGE, JABALPUR

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE

LATEX

S. No.	Title	Maximum Marks	Minimum Marks
I	LATEX-Theory	50	20
II	LATEX-Practical	50	20

Note: Total duration of the course is 30 contact hours.

ST. ALOYSIUS (AUTO) COLLEGE, JABALPUR

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE

LATEX-THEORY

Maximum Marks: 50   Time: 2 hours

Minimum Marks: 20

MODULE I – Typesetting Mathematical Text with LATEX: Sample Document, Type style, Environments, Lists, Centering, Tables, Verbatim, Vertical and Horizontal Spacing.

MODULE II – Equation Environments, Fonts, Hats and Underlining, Braces, Arrays and Matrices, Customized Commands, Theorem–like Environments, Math Styles.

MODULE III – Document classes and the overall structure, Titles for Documents, Sectioning Commands, Packages, Inputting Files, Inputting Pictures, Making a Bibliography, Making an Index, Slides.

REFERENCES:-

1. Laslie Lamtort, LATEX, Addison Wesley Publication Company (1994).

2. David F. Griffiths, Desmond J. Higham, Learning LATEX, Society for Industrial and Applied Mathematics, Philadelphia (1997).

ST. ALOYSIUS COLLEGE(AUTO), JABALPUR
DEPARTMENT OF MATHEMATICS
CERTIFICATE COURSE
LATEX-PRACTICAL

Maximum Marks: 50   Time: 2 hours

Minimum Marks: 20

List of Practicals:

1. WAP in Latex for a Research paper format.
2. WAP in Latex for a Chapter format.
3. WAP in Latex for a Reference format.
4. WAP in Latex for a Certificate format.
5. WAP in Latex for a PPT format.
6. WAP in Latex for insert a graph in Chapter format.