20BSM102T				Basic Mathematics - I (Group B)						
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs. / Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	0	0	3	3	25	50	25	--	--	100

COURSE OBJECTIVES

- To make students acquainted with the basics of sets, relation and functions.
- To familiarize the students with concept complex variables.
- To introduce the concept of matrix, determinants and their use to solve systems of equations.
- To learn fundamental differential and integral calculus.
- To demonstrate concepts and visualization of analytical geometry.

UNIT I SETS, RELATIONS, FUNCTIONS AND COMPLEX NUMBERS **10 Hrs.**

Sets and their representation. Union, intersection and complement. Mapping or function. One-one, onto mappings. Inverse and composite mappings.

Definition and geometrical representation. Algebra. Complex conjugate. Modulus and amplitude. Polar form. DeMoivre's theorem. Roots of complex numbers. Simple functions.

UNIT II MATRICES AND DETERMINANTS **10 Hrs.**

Algebra of matrices. Determinant of a square matrix. Properties of determinants. Some simple type of matrices. Inverse of a matrix. Solution of equations. Intersections. Distance between two points. Shortest distance between lines.

UNIT III DIFFERENTIAL AND INTEGRAL CALCULUS **10 Hrs.**

Basic concept of limit and continuity. Derivative. Rules of differentiation. Tangent to a curve. Taylor's series. Maxima and minima. Antiderivative, Fundamental theorem of calculus (statement only). Integrals of elementary functions. Substitution and partial fractions. Definite integral as a limit of sum. Properties of definite integrals. Application to areas and lengths.

UNIT IV TWO DIMENSIONAL COORDINATE GEOMETRY **10 Hrs.**

Cartesian coordinate system. Distance between two points. Equation of line in different forms. Equations of circle, ellipse and parabola. Equation of a tangent to a curve. Area of a triangle.

TOTAL **40 Hrs.**

COURSE OUTCOMES

On completion of the course, student will be able to
CO1 – Apply set operations.
CO2 – Demonstrate the concepts of complex numbers
CO3 – Analyse the applications of determinants.
CO4 – Demonstrate basic matrix operations.
CO5 – Apply differential and integral calculus.
CO6 – Analyse two dimensional coordinate geometry.

TEXTS AND REFERENCES

1. G. B. Thomas and R.L. Finney, Calculus and analytical geometry, 9th ed., Pearson Education Asia (Adisson Wesley), New Delhi, 2000
2. NCERT, Mathematics Textbook for class XI and XII, 2009.
3. R.D. Sharma, Mathematics, Dhanpat Rai Publications, New Delhi, 2011.
4. M.D. Raisinghania, Ordinary and Partial Differential Equations by, 8th ed., S. Chand Publication, 2010.

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max. Marks: 100	**Exam Duration: 3 Hrs.**
Part A: 6 questions of 4 marks each	24 Marks
Part B: 6 questions of 8 marks each	48 Marks
Part C: 2 questions of 14 marks each	28 Marks