17BCA1711(B): Mathematics-I

Teaching Hours: 4 Hrs/week **Marks: Main Exam: 80**
IA: 20

UNIT I 10Hrs

Complex Numbers:Complex Numbers; Conjugate of a complex number; modulus of a complex Number; geometrical representation of complex number; De Moivere's theorem; nth roots of a complex number.

UNIT II 10Hrs

Sequence and Series: Arithmetic Progression (A.P.), Arithmetic Mean (A.M.), Geometric Progression (G.P.), general term of a G.P., sum of n terms of a G.P. Arithmetic and geometric series, infinite G.P. and its sum, geometric mean (G.M.). Relation between A.M. and G.M.

UNIT III 10Hrs

Binomial Theorem: Statement of the binomial theorem for positive integral indices, general and middle term in binomial expansion, simple applications.

Quadratic Equations: Solution of Quadratic Equations by factor method, complete square method, and Discriminant method, Relation of the roots.

UNIT IV 10Hrs

Introduction to Trigonometry: Trigonometry, The theorem of Pythagoras, Trigonometric ratios of acute angles, Evaluating trigonometric ratios, Solution of right-angled triangles, Angles of elevation and depression, Sine and cosine rules, Area of any triangle.

Vectors: Scalars and vectors, addition of two vectors, vector subtraction, scalar and vector products.

UNIT V 10Hrs

Co-ordinate Geometry: Distance formulae, section formulae, shifting of origin. Slope of a line and angle between two lines. Various forms of equations of a line: parallel to axes, point slope form, slope-intercept form, two-point form, intercepts form and normal form. General equation of a line.Equation of family of lines passing through the point of intersection of two lines.Distance of a point from a line.

References:

1. 11th& 12th NCERT Mathematics books.
2. B. S. Grewal, Elementary Engineering Mathematics, Khanna Publishers
3. S. L. Loney, M.A., The elements of coordinate geometry, Scholarly Publishing Office,University of Michigan Library
4. S. L. Loney, M.A., Plane Trignometry, Scholarly Publishing Office,University of Michigan Library
5. https://people.math.osu.edu/fowler.291/sequences-and-series.pdf

Additional Reading:

6. H. S. Hall and S. R. Knight , Algebra for colleges and schools, McMillan Company
7. https://en.wikibooks.org/wiki/Elementary_School_Mathematics
8. https://en.wikibooks.org/wiki/Trigonometry#Table_of_Contents