Introduction to Basic Mathematics Syllabus

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Revision

Pre-requisite

1. Laws of Indices
2. Formula of factorization and expansion
3. Laws of logarithm with definition of Natural and Common logarithm.

Partial Fraction

No of Lectures-04, Marks-07

1. Definition of polynomial fraction proper and improper fractions and definition of partial fractions.
2. To Resolve proper fraction into partial fraction with denominator containing non repeated linear factors, repeated linear factors and irreducible non repeated quadratic factors.
3. To resolve improper fraction into partial fraction.

Determinant and Matrices

Determinant: No of Lectures-02, Marks-04

1. Definition and expansion of determinants of order 2 and 3.
2. Cramer's rule to solve simultaneous equations in 2 and 3 unknowns.

Determinant and Matrices

Matrices: No of Lectures-10, Marks-11

1. Definition of a matrix of order $m \times n$ types of matrices.
2. Algebra of matrices such as equality, addition, subtraction, scalar multiplication and multiplication.
3. Transpose of a matrix.
4. Minor, cofactor of an element of a matrix, adjoint of matrix and inverse of matrix by adjoint method.
5. Solution of simultaneous equations containing 2 and 3 unknowns by matrix inversion method.

Binomial Theorem

No of Lectures-04, Marks-03

1. Definition of factorial notation, definition of permutation and combinations with formula.
2. Binomial theorem for positive index.
3. General term.
4. Binomial theorem for negative index.
5. Approximate value (only formula).

Trigonometry

No of Lectures-18, Marks-18

1. Measurement of an angle.
2. Relation between degree and radian.
3. Fundamental Identities.
4. Trigonometric ratios of allied, compound, multiple and sub-multiple angles.
5. Factorization and defactorization formula.
6. Inverse Trigonometric ratios.
7. Properties of Triangle.

Coordinate Geometry

Point and Distances: No of Lectures-04, Marks-03

1. Distance formula, section formula, midpoint, centriod of triangle.
2. Area of triangle and condition of collinearity.

Coordinate Geometry

Staight Lines: No of Lectures-06, Marks-09

1. Slope and intercept of straight line.
2. Equation of straight line in slope point form, slope-intercept form, two-point form, two-intercept form, normal form, General equation of line.
3. Angle between two straight lines condition of parallel and perpendicular lines.
4. Intersection of two lines.
5. Length of perpendicular from a point on the line and perpendicular distance between parallel lines.

Coordinate Geometry

Circle: No of Lectures-06, Marks-06

1. Equation of circle in standard form, centre-radius form, diameter form, two-intercept form.
2. General equation of circle, its centre and radius.

Vectors and Its Application

No of Lectures-08, Marks-08

1. Definition of vector, position vector, Algebra of vectors.
2. Dot (Scalar) product with properties.
3. Vector (Cross) product with properties.
4. Work done and moment of force about a point and line.