

## 1.2 APPLIED MATHEMATICS - I

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### RATIONALE

Applied Mathematics forms the backbone of engineering students. Basic elements of algebra, trigonometry, coordinate geometry have been included in the curriculum as foundation course. This course will develop analytical abilities to make exact calculations and will provide continuing educational base to the students.

### DETAILED CONTENTS

1. Algebra (35 hrs)
  - 1.1 Complex numbers: Complex numbers, representation, modulus and amplitude, Demovier's theorem and its applications in solving algebraic equation.
  - 1.2 Geometrical progression, its nth term and sum of n terms and to infinity with application to engineering problems.
  - 1.3. Partial fractions (linear factors, repeated linear factors, non-reducible quadratic factors excluding repeated factors)
  - 1.4 Concept of permutations and Combinations: Value of  ${}^n P_r$   ${}^n C_r$ .
  - 1.5. Binomial theorem (without proof) for positive integral index (expansion and general form); binomial theorem for any index (expansion without proof)
2. Trigonometry (20 hrs)

Review of ratios of some standard angles (0,30,45,60,90 degrees), T-Ratios of Allied angles (without proof), Sum, difference formulae and their applications (without proof). Product formulae (Transformation of product to sum, difference and vice versa). T-Ratios of multiple angles, sub-multiple angles (2A, 3A, A/2).
3. Co-Ordinate Geometry (25 hrs)
  - 3.1 Equation of straight line in various standard forms (without proof), inter section of two straight lines, angle between two lines, perpendicular distance formula (without proof)
  - 3.2 General equation of a circle and its characteristics. To find the equation of a circle, given:
    - \* Centre and radius
    - \* Three points lying on it
    - \* Coordinates of end points of a diameter
  - 3.3. Equations of conics (ellipse, parabola and hyperbola), simple problems related to engineering (standards forms only)

## RECOMMENDED BOOKS

1. Elementary Engineering Mathematics by BS Grewal, Khanna Publishers, New Delhi
2. Engineering Mathematics by Vol. I & II by S Kohli, IPH, Jalandhar
3. Applied Mathematics by Dr. RD Sharma
4. Applied Mathematics, Vol. I & II by SS Sabharwal & Sunita Jain, Eagle Parkashan, Jalandhar
5. Comprehensive Mathematics, Vol. I & II by Laxmi Publications
6. Engineering Mathematics by Dass Gupta
7. Engineering Mathematics by C Dass Chawla, Asian Publishers, New Delhi
8. Comprehensive Mathematics, Vol. I & II by Laxmi Publications
9. Engineering Mathematics, Vol I, II & III by V Sundaram et.al, Vikas Publishing House (P) Ltd., New Delhi
10. Engineering Mathematics by N.Ch.S.N Iyengar et.al, Vikas Publishing House (P) Ltd., New Delhi
11. Engineering Mathematics, Vol I & II by SS Sastry, Prentice Hall of India Pvt. Ltd.,
12. Engineering Mathematics, Vol I & II by AK Gupta, MacMillan India Ltd., New Delhi.

## SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	35	45
2	20	25
3	25	30
<b>Total</b>	<b>80</b>	<b>100</b>