ASSOCITE DEGREE IN SCIENCE

A-Course of Mathematics

Paper–I

NOTE: Each section having four questions, please attempt two questions from each section.

SECTION-I (4/12: 17,17,17,17)

Theory of limit and continuity. Solution of Inequalities. Derivatives and its application to business, economics and physics etc. Differentials. Related rates. Higher order derivatives. Leibnitz's theorem. Limits and continuity of functions of two variables. Partial differentiation and its geometrical meaning for functions of two variables. Euler's theorem. Increments and differentials. Chain Rule. Extrema by 2nd order derivative test and by Lagrange multiplier method. General theorems and indeterminate forms. L' Hospital rule and its applications. Increasing and decreasing functions. Intermediate value theorem and its immediate consequence (only statements)

SECTION-II (4/12: 16,16,16,16)

Translation and rotation of axes. Second degree equation with reference to conic section. Properties of conics. Tangents and normals (Cartesian Coordinates), Polar equations of conics. Sketching of Curves in polar coordinates, Tangents and normals (Polar Coordinates). Parametric representation of curves. Pedal Equations. Vector spaces and sub spaces. Linearly dependent and independent vectors. Bases and dimension. Linear transformations and matrix of linear transformation. (relevant theorems of bases and linear transformation without proofs) .

SECTION-III (4/12: 17,17,17,17)

Sequences. Bounded Sequences. Cauchy sequences. Convergence and divergence of sequences. Cauchy's theorem. Nth-term test, comparison test, ratio test, root test and integral test for convergence and divergence of infinite series. Convergence and divergence of alternating series. Power series. Complex numbers and their properties. De moivre's theorem and its applications. Circular, logarithmic and hyperbolic functions. Separation into real and imaginary parts.

Recommended Books

1. Calculus by H.Anton. John Wiley and Sons New York. (Latest Edition)
2. Calculus By C.H Edwards and D.E. Penney. Prentiee Hall. Ine. (Latest Edition)
3. Calculus By S.I. Grossman. Academic Press Ine (London) Ltd. (Latest Edition)
4. Calculus and Analytic Geometry by S.M. Yousaf. Illmi Kitab Khana. Urdu Bazar Lahore 5th Edition 1997
5. Calculus and analytic geometry by G.B Thomas and R.I. Finney., Adison-Wesley Publishing Company. Lahore. (Latest Edition)
6. Elementary Linear Algebra by C.H. Edwards. Jr and Davide penney. Prentic Hall international Ine. (1988)
7. Mathematical Techniques by K. H. Dar. Irfan-ul-Haq and M.A. Jajja. The Carvan Book House. Kachehry Road Lahore. 9th Edition 1997
8. Mathematics Methods by S.M. Yousaf. Illmi Kitab Khana. Urdu Bazar Lahore. (2000)
9. Set Theory and Logic by Stoll, Robert R.S. Chand & Co. New Delhi
10. Number Theory by Dr. Manzoor Hussain. The Carvan Book House. Kachehry Road, Lahore.
11. Elementary Linear Algebra (sixth edition) by Howard Anton And Chris Rorres. John Willey & Sons. INC. 10th Edition 2010.