

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. Newton-Raphson formula. 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. General theorems (without proofs) and indeterminate forms. L' Hospital rule of functions. Increasing and decreasing functions.

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

Translation and rotation of axes. Second degree equation with reference to conic section. Properties of conics. Polar equations of conics. Tangents and normals. Parametric representation of curves. Pedal Equations. Asymptotes. Extrema and its application. Singular points. Curvature. Evolutes and envelopes.

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

Antiderivatives and indefinite integrals. Methods of integration. Definite integral as limit of sum. Fundamental theorem. Properties. Improper integrals. Reduction formulas. Double and Triple integral (Simple cases). Area between curves. Length of arc. Intrinsic equations. Numerical integration (rectangular, trapezoidal and 1/3 Simpson's rules). Co-ordinates in three dimension. Rectangular, cylindrical and spherical co-ordinates. Equations of plane, straight line, sphere, cylinder, cone, ellipsoid, hyperboloid and paraboloid. Longitude and latitudes. Spherical triangle and direction of Qibla.

Note: A student has to take B-course of Mathematics (both I & II- papers) as an additional course to be eligible to do M.Sc. mathematics as a regular or a private candidate.

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. Prentice Hall. Inc. (Latest Edition)
3. Calculus By S.I. Grossman. Academic Press Inc (London) Ltd. (Latest Edition)
4. Calculus and Analytic Geometry by S.M. Yousaf. Illmi Kitab Khana. Urdu Bazar Lahore 1998
5. Calculus and analytic geometry by G.B Thomas and R.I. Finney., Adison-Wesley Publishing Company. (Latest Edition)
6. Elementary Linear Algebra by C.H. Edwards. Jr and Davide penney. Prentic Hall international Inc. 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. No Theory by Dr. Manzoor Hussai. The Carvan Book House, Kachachry, Lahore
11. Elementary Liner Algebra by Howard Anton and Chris Rorres John Willey & Sons Inc 10th Edition 2010