

ASSOCIATE DEGREE IN SCIENCE
A-Course of Mathematics
Paper-II

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

SECTION-I (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. Asymptotes. Extrema and its application. Singular points. Curvature. Evolute and envelopes. Volume and surfaces of revolution.

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

Definition and examples of metric spaces. Open and closed balls and sets. Neighborhoods. Limit points. Interior, exterior and boundary sets. Closure of a set. Complete metric spaces. Definition and examples of topological spaces. Basic properties. Neighborhoods. Limit points. Interior, exterior and boundary sets. Closure of a set. Divisibility. Euclid theorem. Greatest divisor. Least common multiple. Prime factorization theorem. Introduction to elementary logic. Predicate calculus. Methods of proofs.

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

Definition and examples of a group. Order of an element of a group. Subgroup. Cyclic and permutation groups. Lagrange's theorem. Rings and fields. Algebra of matrices. Co-factors, minors, adjoint and inverse of a matrix. Elementary row and column operations. Echelon form and rank of matrix. Solution of the system of linear equations (Homogeneous and non-homogeneous) by use of matrices. Net work flow problems. Determinants with properties.

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. Lahore. (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. 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 2000

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