

SEMESTER I

M.M. 40110

Credits 3

Hours= 36

Paper-V

MCH-405(a): Elementary Mathematics
(For students without Mathematics in B.Sc)

<p>Unit-I</p>	<p>Vectors</p> <ol style="list-style-type: none"> Vectors, dot, cross and triple products etc, gradient, divergence and curl, Vector Calculus. <p>Matrix Algebra</p> <ol style="list-style-type: none"> Addition and multiplication; inverse, adjoint and transpose of matrices.
<p>Unit-II</p>	<p>Differential Calculus</p> <ol style="list-style-type: none"> Functions, continuity and differentiability, rules for differentiation Applications of differential calculus including maxima and minima (examples related to maximally populated rotational energy levels, Bohr's radius and most probable velocity from Maxwell's distribution etc.)
<p>Unit-III</p>	<p>Integral Calculus</p> <ol style="list-style-type: none"> Basic rules for integration, integration by parts, partial fraction and substitution. Reduction formulae, applications of integral calculus. Functions of several variables, partial differentiation, co-ordinate transformations (e.g. Cartesian to spherical polar).
<p>Unit-IV</p>	<p>Elementary Differential equations</p> <ol style="list-style-type: none"> First-order and first degree differential equations, homogenous, exact and linear equations Applications to chemical kinetics, secular equilibria, quantum chemistry etc
<p>Unit-V</p>	<p>Permutation and Probability</p> <ol style="list-style-type: none"> Permutations and combinations, probability and probability theorems average, variance root means square deviation examples from the kinetic theory of gases etc Curve Fitting (least square fit for a straight line)

Book Suggested

- The chemistry Mathematics Book, E.Steiner, Oxford University Press.
- Mathematics for chemistry, Doggett and Suiclicic, Logman
- Mathematical for physical chemistry: F. Daniels, Mc. Graw Hill.
- Chemical Mathematics D.M. Hirst, Longman.
- Applied Mathematics for Physical Chemistry, J.R. Barante, Prentice Hall
- Basic Mathematics for Chemists, Tebbutt, Wiley.

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