

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

M.Sc. (Biotechnology) (Five Years Integrated)

Semester - I

IBT: 104

Course Title: Mathematics

Unit-I (8 hrs.)

Algebra: Matrices: Different types of matrices; Operations of matrices; Adjoint of a matrix, Inverse of a matrix, Applications of matrices to solve a system of linear equations

Unit-II (8 hrs.)

Theory of equations: Solutions to quadratic equations; Relations between the roots and coefficients of a general polynomial equation in one variable, Transformation of equations, Descartes's rule of signs; Solutions of cubic equation (Cardan method) Biquadratic equations.

Unit-III (8 hrs.)

Calculus: Differential calculus: Concept of limit and continuous functions, derivatives and its physical significance, basic rules for differentiation (without derivation). Maximum and minimum, their applications in biology; partial differentiation curve sketching.

Unit-IV (8 hrs.)

Integral calculus: Integration; basic rules for integration (without derivation), definite integrals; geometric meaning of definite integrals applications in the biology and chemistry.

Unit-V (8 hrs.)

Differential equations: Formation of differential equations; order and degree of differential equations; solutions of differential equations, methods of solving first order and first degree equation (Separable variables, homogeneous/non differential equations, exact differential equations; linear differential equations, Bernoulli's equations) Second order linear equations; applications in biology chemistry.