

**H. N. G. University, Patan**  
**M.C.A. (5 Years Integrated) SEMESTER - II**  
**201 : Mathematics – II**

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**Unit : 1** **[25%]**

**Differentiation:**

Definition of Derivative, Rules of derivative (without proof), Derivative Of some standard function polynomials, Implicit, Exponential, Logarithmic And Trigonometric function, High order of derivative.

**Integral Calculus:**

Infinite integral as anti derivative as standard integral, Basic rules of Integration. (without proof), Integration by parts.

**Unit : 2** **[25%]**

**Differential Equation:**

Family of curves leading to differential equation and conversely its Solution leading to a family of curve. Definition of order and degrees Of a Differential equation. Solution of first order and first degree Differential equation by

1. separable variable method
2. Homogeneous equation
3. Linear equation

**Unit : 3** **[25%]**

**Co – Ordinate Geometry:**

Introduction , Quadrants and co-ordinates , distance between two Points , Section Formula , Area of a Triangle , Co linearity of three Points , Equations of a straight line , General Equation of a straightLine , Angle between two straight line (without proof).

**Unit : 4** **[25%]**

**Graph Theory and Trees:**

Definition of graph, Isomorphism complete graph, Empty graph, Degree of a vertex, The first theorem of graph theory (without proof), Sub graph, complete graph, k- Regular graph, Graph operations (union (u), Intersection (G), Ring Sum E), Complement of a graph, Walk, path, Simple concept of following:-  
connected, components, Cycle , Trees , Binary trees.

**Boolean Algebra:**

Introduction , Basic Definitions , Duality ,Basic Theorem , Boolean Algebra and lattice , Representation of Theorem , Sum-of-product Form for sets , sum-of-product form for Boolean Algebra.

**Text Books :-**

Advanced Mathematics – Ravi Gor (Nirav Prakashan)

**Reference Book :-**

Discrete Mathematics - S . Lipschutz , M .Lipson