SARDAR PATEL UNIVERSITY
Programme: B.Sc
Semester: I
Syllabus with effect from: June-2011

Paper Code: US01CMTH02	Total Credit: 2
Title of Paper: Calculus & Differential Equations	

Unit	Description in Detail	Weightage (%)
I	Successive derivative, Higher order derivatives: nth derivatives of standard form. Leibnitz's theorem and its applications; Angles between radius vector and tangent to the curve.	25%
II	Curvature, derivative of arc, radius of curvature for Cartesian, Parametric and polar equations. Rectification: Expression for the length of arcs given in Cartesian, parametric and polar forms; derivation of intrinsic equation for Cartesian and polar equations.	25%
III	Limit and continuity of a functions of two variables; neighborhood of a point; Partial derivatives; Euler's theorem on homogeneous functions of two and three Variables, Theorem on total deferential; differentiation of composite and implict functions.	25%
IV	Exact differential equations; integrating factors; differential equations of the First order but not of First degree solvable for p and for y; Clairaut's equation; Orthogonal trajectories in Cartesian coordinates.	25%

Basic Text & Reference Books:

- Introduction to calculus and differential equations, By D J Karia, N Y
- Patel, B P Patel, M L Patel [Standard Text]Articles: 8,9,10,17,18,19,49,50,51,20 to 25,26.2,54(case 6 only), 55(method 1only),56,57,58,60, 62(only 62.1,62.2,62.4 to 62.7)
- Differential Calculas. Shanti Narayan, Fourteenth Edition, Shamlal charitable trust, New Delhi, 1996
- Integral Calculas. Shanti Narayan, Fourteenth Edition, Shamlal charitable trust, New Delhi, 1996
- Higher Engineering Mathematics, Thirty Fifth edition. Grewal, B.S. [Khanna Publ]
- The calculus with analytic geometry, Louis Leithod, Harper-Collins Pub.