

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

<b>Paper Code: US01CMTH03</b>	<b>Total Credit: 2</b>
<b>Title of Paper: Problem &amp; Exercises in Mathematics</b>	

Unit	Description in Detail	Weightage (%)
	L' Hospital's rule and exercises	
	Sketching of Cartesian curve, parametric curves, polar curves and reciprocal curves	
	Angles between two curves	
	Radius of curvature for Cartesian, Parametric and polar equations	
	Arc length of the curves given in Cartesian, parametric and polar forms	
	Intrinsic equation for Cartesian and polar equations	
	Euler's theorem on homogeneous functions, Change of variables	
	Maxima and minima for a function of two variables	
	Taylor's expansion	
	Exact Differential equations	
	Differential equations of the $n$ -th order but not of $n$ -th degree solvable for $p$ , for $x$ and for $y$	
	Orthogonal trajectories of a family of curves	
	Algebra of complex numbers	

**Note:**

- Problem solving skill in mathematics is an important aspect in the teaching of mathematics.
- There would be a batch of problem solving session will be of four hours per week and they will be conducted in batches of students of size 25 per batch.

**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]
- Vasavada H.M., Analytical geometry of two and three dimensions , 1992
- Differential Calculus. Shanti Narayan, Fourteenth Edition, Shamlal charitable trust, New Delhi, 1996
- Integral Calculus. 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.

