Core 1.1:

BMA-C101
Differential Calculus

Credit : 6   **L T P**

Time: 3 hrs   4 2 0

NOTE: The question paper shall consist of three sections (Sec.-A, Sec.-B and Sec.-C). Sec.-A shall contain 10 objective type questions of one mark each and student shall be required to attempt all questions. Sec.-B shall contain 10 short answer type questions of four marks each and student shall be required to attempt any five questions. Sec.-C shall contain 8 descriptive type questions of ten marks each and student shall be required to attempt any four questions. Questions shall be uniformly distributed from the entire syllbus. The previous year paper/model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

Limit and Continuity (ε and δ definition), Types of discontinuities, Differentiability of functions, Rolle's theorem, Mean Value theorems.

Successive differentiation, Leibnitz's theorem, Partial differentiation, Euler's theorem on homogeneous functions. Taylor's theorem with Lagrange's and Cauchy's forms of remainder, Taylor's series, Maclaurin's series of sin x, cos x, e^x, log(1+x), $(1+x)^m$, Maxima and Minima. Indeterminate forms.

Tangents and normals, Curvature, Asymptotes, Singular points. Tracing of curves. Parametric representation of curves and tracing of parametric curves, Polar coordinates and tracing of curves in polar coordinates.

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Books Recommended
1.   H. Anton, I. Birens and S. Davis, *Calculus*, John Wiley and Sons, Inc., 2002.
2.   G.B. Thomas and R.L. Finney, *Calculus*, Pearson Education, 2007.