|  |  |
| --- | --- |
|  | B.sc 1 sem , calculus |
| Week | Topics |
| 1 | Definition of the limit of a function. Basic properties of limits, Continuous functions and classification of discontinuities. |
| 2 | Differentiability. Successive differentiation. |
| 3 | Leibnitz theorem.  Maclaurin and Taylor series expansions. |
| 4 | Asymptotes in Cartesian coordinates, intersection of curve and its asymptotes, asymptotes in polar coordinates. Curvature, radius of curvature for Cartesian curves, parametric curves, polar curves. |
| 5 | Newton’s method. Radius of curvature for pedal curves. Tangential polar equations. Centre of Curvature. Circle of Curvature. |
| 6 | Chord of curvature, evolutes. Tests for concavity and convexity. Points of inflexion. Multiple points. Cusps, nodes & conjugate points. Type of cusps. |
| 7 | Tracing of curves in Cartesian, parametric and polar co-ordinates |
| 8 | Reduction formulae. |
| 9 | Rectification, intrinsic equations of curve. |
| 10 | Quardrature (area)Sectorial area. Area bounded by closed curves. |
| 11 | Volumes and surfaces of solids of revolution. |
| 12 | Theorems of Pappu’s and Guilden. |