Semester I

GE- I CALCULUS
Five Lectures per week + Tutorial as per University rules
Max. Marks 100 (including internal assessment)
Examination 3 hrs.

UNIT-I
ε-δ Definition of limit of a function, One sided limit, Limits at infinity, Horizontal asymptotes, Infinite limits, Vertical asymptotes, Linearization, Differential of a function, Concavity, Points of inflection, Curve sketching, Indeterminate forms,L'Hopital's rule, Volumes by slicing, Volumes of solids of revolution by the disk method.

UNIT-II
Volumes of solids of revolution by the washer method, Volume by cylindrical shells, Length of plane curves, Area of surface of revolution, Improper integration: Type I and II, Tests of convergence and divergence, Polar coordinates, Graphing in polar coordinates, Vector valued functions: Limit, Continuity, Derivatives, Integrals, Arc length, Unit tangent vector.

UNIT-III
Curvature, Unit normal vector, Torsion, Unit binormal vector, Functions of several Variables, Graph, Level curves, Limit, Continuity, Partial derivatives, Differentiability Chain Rule, Directional derivatives, Gradient, Tangent plane and normal line, Extreme values, Saddle points

REFERENCES:
[1] G. B. Thomas and R. L. Finney, Calculus, Pearson Education, 11/e (2012)
[2] H. Anton, I. Bivens and S. Davis, Calculus, John Wiley and Sons Inc., 7/e (2011)