Stat- 114: Calculus

100 Marks: 03 Credits

Number of Class: 35-40

Functions: Function and Relation, Domain, Range, Inverse Function and Graphs of Functions Like exponential, Logarithmic, Sine, Tangent etc., Limits, Existence and Finding of Limits, Sandwich Theorem, Limit Involving Infinity, Intermediate Value Theorem, Continuity, and Indeterminate Form.

Ordinary Differentiation: Differentiability, Differentiation, Successive Differentiation and Leibnitz Theorem, Application of the Derivative, Extreme Value Theorem.

Expansions of Functions: Rolle's Theorem, Mean Value Theorem, First Derivative Test, Concavity Test, Second Derivative Test, Taylor's and Maclaurin's Formulae, Maxima and Minima Functions of One Variable.

Partial Differentiation: Euler's Theorem, Tangents and Normal Asymptotes, L-Hospitals Rule, Guide Line for Sketching Graph.

Indefinite and Definite Integrals: Method of Substitution, Integration by Parts, Special Trigonometric Functions and Rational Fractions. Fundamental Theorem of Definite Integrals, General Properties, Evaluations of Definite Integrals and Reduction Formulae, Ideas of Double Integral and Triple Integral, Finding the Area of R_y Region, Finding the Value of a Solid Revolution, Riemann Theorem/Sum, Derivation of Inverse Function, Integration by Parts.

Text

1. Anton, H (2006): *Calculus with Analytic Geometry*, Wiley, New York.

References

1 Ayres, F. and Meldelson, E. (1992): *Calculus*, McGraw-Hill, 3rd edition, New York.

2 Bacon, H.M. (1942): *Differential and Integral Calculus*, 2nd edition, McGraw-Hill, New York.

3 Bell, J.T. (1972): *An Elementary Treatise on Coordinate Geometry of Three Dimensions*, 3rd edition, The Macmillan Press Ltd, New York.

4 Das, B. C., and Mukharjee, B. N. (2009-2010): *Integral Calculus*, Revised edition, U. N. Dhur & Sons Private Ltd.

5 Das, B. C., and Mukharjee, B. N. (2010-2011): *Differential Calculus*, Revised edition, U. N. Dhur & Sons Private Ltd.

6 Edwards, J, (1994): *Differential Calculus*, Macmillan, London

7 Lang, S. (1988): *First Course in Calculus*, 5th edition, Springer-Verlag, New York.

8 Purcell, E.J.: *Analytic Geometry,* Appleton Century-Crofts Inc., New York.