Subject Code : N2D4

PAPER IV: MATHEMATICAL AND STATISTICAL APPLICATIONS IN ENVIRONMENTAL SCIENCES

UNIT1:

Basic concepts on number system - Fundamental definitions of some standard functions sin x, cos x, tax x, e^x, log x etc. Polynomials - linear and quadratic functions non-homogeneous equations - limit of a functions - derivatives of some fundamental results of standard functions - Product and quotient rule of differentiation. Maxima and minima of functions.

UNIT 2:

Definition of integral - some standard integrals of functions - integration by suitable algebraic substitution - simple problems. Techniques of first order and first degree differential equations.

UNIT 3:

Graphical representation of statistical data - Bar diagram, pie diagram, Histogram, polygon, frequency curve, Ogives - measure of central tendency - mean, median and mode - measures of dispersion - range, quartile, mean deviation, standard deviation, measures of skewness and kurtosis and coefficient of variation (statements only) - simple problems only - correlation (Karl Pearson's coefficient of correlation - simple problems), regression.

UNIT 4:

Probability theory - definition of probability - events - rules of probability (addition and multiplication rules only) - compound probability - baye;s theorem - theoretical distributions - binomial poisson and normal (statements only) - with simple application problems.

UNIT 5:

Sampling theory - testing of hypothesis using normal and student - t distributions - Application to environmental studies.

References:

1. Engineering Mathematics Vol. I & II by Dr. M.K.Venkatraman, The National Publishing Co.
2. Engineering Mathematics Vol. by P. Kandasamy K. Thilagavathi and K. Gnanavathi, S. Chand and company Ltd.
3. Amble V.N. 1975, Statistical methods in Animal Sciences, Indian Society of Agricultural Statistics, New Delhi.
4. Bailey, N.T.J. Statistical methods in Biology, The English Universities Press Ltd., U.K.
5. Fisher R.A. and Yates E. 1963, Statistical table for Biological Agricultural and Medical Research, Oliver and Boyd, London.