MEN-C 402 : Ecological modeling, statistics, basic computing and research methods M.M.: 70

UNIT – I

Introduction to Mathematical Modeling (Definition and Terminology), Basic principles, advantages and limitations for modeling. Basic models for environmental research (Mass balance: Eulerian models, Lagrangian model, point source stream pollution model, Gaussian plume model), Role of modeling in environmental research.

UNIT – II

Introduction to Biostatistics: Development, Definition, Characteristics, importance and limitations, Preliminary concept (Variables and constants) sources and presentation of data and its graphical representation, measures of central tendencies: Mean, median and mode, Standard deviation, elementary knowledge of probability, correlation and linear regression.

UNIT – III

Distribution– Normal, Bionomial and Poisson, analysis of variance, test of significance (Introduction, procedure of testing hypothesis), t-test, Chi-square test, F-test, Standard deviation (SD), ANOVA. Lotkaa-Volterra model of population growth.

UNIT – IV

Computer organizations, Applications of computer, MS office, MS excel, Power Point presentation, Components of computer, Types of computers; Computer generations, Concept of operating system, Computer graphics. Basic concepts of networking and its applications, Internet connection, Website, Internet browsing, Applications of Internet, E-mail, GIS-scope.

UNIT – V

Scientific documentation: Methods of literature collection, design, planning and execution of investigation, Preparation of scientific documents, general articles, research papers, review articles, editing of research papers, methods of citation, Plagiarism and copy right act. Presentation techniques, Effective communication skill, discussion and critic.

NOTE: The question paper shall consist of two sections (A & B). Section A shall contain ten short answer type questions of six marks each and student has to attempt any five questions in about 150 words each. Section B shall consist eight long answer type questions of ten marks each and student shall be required to attempt any four questions in detail. Questions shall be uniformly distributed from the entire syllabus. The previous year paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.