Paper -II (404102): Biochemistry, Pharmacognosy Cytogenetics Physiology and Ecology Biostatistics Bioinformatics

Biochemistry

Chemistry of Nucleic Acids
Amino Acids, Classification, Structure and Metabolism

Pharmacognosy

Definition and scope of Pharmacognosy
Sources of Crude Drugs –
Roots, Rhizome, Bulb, Corm, Leaves, Stems, Flowers, Fruits and Seeds

Cytogenetics

Chromosomes- Chromosome Morphology- Eukaryotic Chromosomes and its Molecular Organization.
Chromatin - Composition and Structure; Hetero-Chromatin and Euchromatin;
Special Types of Chromosomes- Salivary Gland, Lamp Brush and B Chromosomes
Multiple Alleles-General account. ABO Blood Groups in Man. *Rh* factor.
Quantitative Characters- General characters of Quantitative Inheritance, Polygenic Inheritance; Skin Color in Man, Ear size in Maize.
Linkage and Crossing Over- Linkage and its Importance, Linkage and independent assortment.
Complete and Incomplete Linkage.
Crossing Over –Two point and Three point Test Cross.
Determination of Gene Sequence. Interference and Coincidence. Mapping of Chromosomes

Physiology

Photosynthesis: Photosynthetic Apparatus, Structure and Function of Chloroplast, Quantasomes - Solar Spectrum and its importance
Fluorescence and Phosphorescence
Pigment Systems
Mechanism of Photosynthesis- Light Reaction - Cyclic and Non Cyclic Photophosphorylation. Hill Reaction –
Dark Reaction: Calvin Cycle. Comparative Study of C3, C4, and CAM Plants.
Photorespiration –
Bacterial Photosynthesis and Chemosynthesis -
Factors affecting Photosynthesis - Law of Limiting Factors.

Respiration: Introduction, Respiratory Substances, Types of Respiration- Aerobic and Anaerobic.
Aerobic Respiration - Glycolysis, Krebs's Cycle,
Anaerobic Respiration –Fermentation: Alcoholic and Lactic Acid Fermentation.
Energy Relation of Respiration and Factors affecting respiration.

Ecology

Concept of Environmental Factors, Soil as an Edaphic Factor, Soil Composition, Types of Soil, Soil Formation, Soil Profile
Plant Succession, Concept of Hydrosere and Xerosere

Biostatistics

General Introduction.
Sample and Sampling. Methods of Sampling. Collection and Representation of Data.
Measures of Central Tendency –Mean, Mode, Median
Measures of Dispersion –Range, Quartile Deviation, Mean Deviation, Standard Deviation, Standard Error, Variance.

Bioinformatics

Introduction to Bioinformatics – www, Internet and its uses,
Tools used in Bioinformatics related to Biotechnology,
NCBI Data Models and other Data Bases,
Services offered by NCBI and EBI