

5. Tanquidi-Nazariye - Ihtesham Husain.
6. Tanquid Kya Hai – Aale Ahmed Suroor.
7. Urdu Shairi-per-ek-Nazar – Kalimuddin Ahmed.

**Unit – III – Ghalib – His prose and poetry**

***Books Prescribed:***

1. Diwan-e-Ghalib – Abdur Rahman Bijnori
2. Ghalib – Nama – S.M. Ikram.
3. Khutoot-e-Ghalib – Mahesh Prasad.

**Unit – IV – Dr. Nazir Ahmed and his Novels**

***Books Prescribed:***

1. Miratul-Uroos – Dr. Nazir Ahmed
2. Banatun-Nas - -do-
3. Taubatan-Nasuh - -do-
4. Ayyama - -do-
5. Ibnul-Waqt -do-

## Zoology

### PAPER-I

**UNIT-I BIOLOGY OF NON-CHORDATES**

Protozoan parasites of man; Reproduction in sponges; Polymorphism in coelenterates; Helminth parasites of man and parasitic adaptations; Coelom in annelids; Vision in insects; Horseshoe crab and its importance; Locomotory organs and locomotion in molluscs; Larval forms in echinoderms and origin of chordates; Comparative study of the excretory organs and excretion in invertebrates.

**UNIT-II BIOLOGY OF CHORDATES**

Origin of chordates; Biology and affinity of protochordates; Biology and affinities of Cyclostomes and Dipnoi; Migration in fishers; Metamorphosis in amphibians; Poisonous and non-poisonous snakes of India; Flight adaptation in birds; Adaptive radiation in mammals; Aquatic mammals and their adaptations; Dentition in mammals.

**UNIT-III ECOLOGY, BIOSTATISTICS, ANIMAL TAXONOMY**

Population and its characteristics; Biotic community; Environmental pollution, Green house effect, Acid rain; Wildlife of India and their conservation; Probability and probability distribution (Normal, Binomial and Poisson); Tests of significance (t- and  $\chi^2$  tests); Simple correlation; Regression and Analysis of variance; Speciation and species concept; Modern trends in taxonomy; Collection, preservation and curation of animals of taxonomic importance.

## **UNIT-IV      EVOLUTION, ETHOLOGY**

Variation and natural selection as underlying mechanisms of evolution; Isolation and isolating mechanisms in relation to origin of species; Patterns of evolution (micro, Macro and Mega); Hardy-Weinberg principle in relation to population genetics; Molecular and genomic evolution; Ancestry of man; Pheromones and behaviour; Social organization in primates; Courtship and mating behaviour in mammals; Biological clock and circadian rhythm.

## **UNIT-V      ECONOMIC ZOOLOGY, MICROBIOLOGY**

Biology of silk moth and sericulture; Apiculture; Earthworm and vermicomposting; Induced breeding in fishes; Pearl culture; Transgenic animals and their importance; Structure of bacteria and bacteriophage; Isolation, screening and culture of bacteria related to production of antibiotics and enzymes; Lytic and lysogenic cycles; Transduction, transformation and conjugation in bacteria.

## **PAPER-II**

### **UNIT-I      CELL BIOLOGY AND GENETICS**

Structure, composition and arrangement of biological membranes; Transport across cell membrane; Cytoskeleton- structure and dynamics; Cell cycle and cell signaling; Cell division – Mitosis and Meiosis; Cell necrosis and apoptosis; Linkage, Crossing over and Gene mapping; Gene interaction; Penetrance and expressivity; Human genome project; Chromosomal aberrations and their genetic consequences;

### **UNIT-II      PHYSIOLOGY AND ENDOCRINOLOGY**

Blood groups and blood coagulation; structure of hemoglobin and transport of gases of respiratory importance; Ultra filtration in the mammalian kidney and mechanism of urine formation; Osmoregulation in aquatic animals; Cellular organization of neuron and synaptic transmission; Chemistry and biological action of pituitary hormones; Neurosecretion and hypothalamic control of adenohypophyseal function; Mechanism of hormone action; Testicular events and biosynthesis of testosterone; Endocrinology of implantation, parturition and lactation; Role of hormones during pregnancy.

### **UNIT-III      BIOCHEMISTRY AND MOLECULAR BIOLOGY**

Electron transport chain and ATP synthesis; Carbohydrate metabolism and its regulation; Protein synthesis, three dimensional structure of protein and protein folding; Kinetics and mechanism of enzyme action; Metabolism of amino acids-transamination, oxidative deamination; Oxidation of fatty acids; DNA structure, types and its organization in the chromatin; Synthesis and processing of mRNA; Regulation of gene expression in prokaryotes; Blotting techniques – Southern, Northern and Western; Gene, genome and genetic code.

#### **UNIT-IV      IMMUNOLOGY AND DEVELOPMENTAL BIOLOGY**

Antigen, antibody and antigen-antibody reactions; Immunoglobulin – structure and function; Humoral and cell mediated immunity; Immunological aspects of transplantation, autoimmunity and immunotolerance; Hypersensitivity, Vaccines, interferon, episomes and toxins; Biochemical aspects of fertilization, Organizer concept and embryonic induction; Differential gene expression during development; In vitro fertilization and embryo transfer; Regeneration in vertebrates; Stem cell biology.

#### **UNIT-V      INSTRUMENTATION AND TECHNIQUES**

Microscopy – light, fluorescent, electron (Scanning & Transmission) microscopy; Ultra centrifugation (Differential and Density gradient); Electrophoresis (Agarose and PAGE); UV and visible spectrophotometry; Chromatography – Paper, Gas and Liquid chromatography; Principles and technique of PCR; Radioisotopic techniques and scintillation counting; Karyotyping and chromosomal analysis; Tissue fixation and microtomy; Histochemical methods for the demonstration of carbohydrate, protein, lipid and nucleic acids.