**B.Sc ZOOLOGY SYLLABUS UNDER CBCS**
**FOR IV ..SEMISTER**

**CORE PAPER - IV**
**CELL AND MOLECULAR BIOLOGY, GENETICS AND EVOLUTION**

## BLOCK – I CELL BIOLOGY

Unit –1 : Introduction to Cell Biology and Ultra Structure of the Animal Cell, Structure and Functions of the Cell Organelles – Plasma Membrane, Endoplasmic Reticulum, Golgi Complex and Lysosomes

Unit –2 : Structure and Functions of the Cell Organelles – Mitochondria, Centrioles and Ribosomes, Nucleus and Chromosomes

Unit –3 : Cell Division, Gametogenesis and Parthenogenesis

## BLOCK – II : MOLECULAR BIOLOGY

Unit – 4: Nucleic Acids - DNA (Deoxyribo Nucleic Acid) – Structure; RNA (Ribo Nucleic Acid) - Structure, types :DNA Replication

Unit – 5 : Protein Synthesis – Transcription and Translation

Unit – 6 : Gene Expression – Genetic Code; operon concept

## BLOCK – III Genetics

Unit – 7: Mendals laws of Inheritance and Non-Medelian Inheritance, Linkage and Crossing over; Sex determination and sex-linked inheritance

Unit – 8 : Mutations: Chromosomal Mutations- Deletion, Duplication, Inversion, Translocation, Aneuploidy and Polyploidy. Gene mutations- Induced versus Spontaneous mutations.

Unit -9 : Inborn errors of metabolism. One gene one enzyme, one gene one polypeptide theory.

## BLOCK---V EVOLUTION

Unit -10 : Origin of Life and Introduction to Evolutionary Theories: Lamarckism and Neo-Lamarckism, Darwinism and NeoDarwinism, Modern synthetic theory.

Unit -11 : Direct Evidences of Evolution : Types of fossils, dating of fossils; Evolution of Man / Evolution of Horse

Unit -12 : Species Concept : Isolation – Pre-mating and post mating isolating mechanisms; Speciation: Methods of speciation - Allopatric and sympatric.

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**B.Sc ZOOLOGY PRACTICAL SYLLABUS UNDER CBCS**
**FOR IV ..SEMISTER**

**CORE PAPER - IV**
**CELL AND MOLECULAR BIOLOGY, GENETICS AND EVOLUTION**

**LABORATORY MANUAL & RECORD**

**BLOCK – 1: CYTOLOGY**

Unit -1: Preparation and Identification of slides of Mitotic divisions with onion root tips
Unit -2: Preparation and Identification of different stages of Meiosis in Grasshopper Testes
Unit -3: Identification and study of the following slides i). Different stages of Mitosis and Meiosis ii) Lamp brush and Polytene chromosomes

**BLOCK II: GENETICS**

Unit -4: Problems on Genetics - Mendelian inheritance, Linkage and crossing over, Sex linked inheritance

**BLOCK – III: EVOLUTION**

Unit -5: Museum Study of Fossil animals: Peripatus, Coelacanth Fish, Dipnoi fishes, Sphenodon, Archeopteryx.
Unit -6: Study of homology and analogy from suitable specimens and pictures
Unit- 7 : Phylogeny of man/horse with diagrams /cut outs.
Unit -8: Macroevolution using Darwin finches (with diagrams / cut outs of beaks with different species)

Laboratory Record work shall be submitted at the time of practical examination
An “Album” containing photographs, cut outs, with appropriate write-up about Genetics and Evolution. Computer aided techniques should be adopted as per UGC guide lines.

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