

## **BIOLOGY SYLLABUS FOR PUNJAB LECTURER RECRUITMENT (2026)**

### **THE CELL - THE BASIC UNIT OF LIFE.**

- i. The Cell : Cell theory, Prokaryotic and eukaryotic cells, The nucleus, Plasma membrane, cell transport, endomembrane system and cell organelles.
- ii. Biomolecules : Macromolecules, Structure , classification and biological importance of proteins, Carbohydrates, nucleic acids and lipids;  
Enzymes: properties and classification
- iii. Cell cycle and cell division.

### **REPRODUCTION**

**Reproduction in organisms** : Sexual reproduction in flowering plants, Human reproduction

**Reproductive health**

### **PLANT PHYSIOLOGY**

**Transport in plants** (diffusion, osmosis, transpiration), Mineral nutrition,

#### **Photosynthesis:**

The chloroplast - structure, equation, factors affecting photosynthesis .

Light reaction ( light absorption, photosystems, photolysis, chemiosmosis, photophosphorylation

Dark reaction: carbon fixation, the Calvin cycle, C4 cycle, CAM plants and Photorespiration.

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**Respiration:** Glycolysis, Krebs cycle, ETS

**Plant growth and development:** Growth regulators (Auxin, Gibberellin, Cytokinin, Ethylene, ABA), Photoperiodism and Vernalization

## **ECOLOGY AND ENVIRONMENT**

- i. Organisms and environment, population attributes, Population Interactions.
- ii. Ecosystem structure and function, Competitive exclusion. Principles of ecology (Allen's Rule), ecological successions.
- iii. Biodiversity and its conservation: patterns of biodiversity, importance of biodiversity, causes of loss of biodiversity
- iv. Environmental issues: Pollution (Air and Water), Global warming (Green House Effect), Ozone depletion, Deforestation

## **DIVERSITY IN THE LIVING WORLD**

**Biology:** Its meaning and relevance to mankind, Concept of species and taxonomical hierarchy.

**Systematics:** Introduction, importance, and objectives

**Classification of living organisms:** Classification: Two-kingdom system, Three domains Five-kingdom system, Nomenclature and binomial system, Acellular pathogens (virus, viroids, prions)

**Kingdom Monera,** Archaeobacteria and Cyanobacteria.

General structure, occurrence, reproduction, and economic importance.

**Kingdom Protista**

General features, occurrence, reproduction, and economic importance

**Kingdom Fungi**

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General features, classification, and importance

### **Kingdom Plantae**

Algae(Volvox, Blue Green Algae), Bryophytes(Marchantia, Funaria, Antherceros) ,Fungi (yeast, Agaricus), Pteridophytes(Selaginella,Equisetum), Gymnosperms(Cycas, Pinus,Ehpedra)

General structure, reproduction, and economic importance.

### **Kingdom Animalia**

a. Non-chordates: Classification up to phylum level

b. Chordates: Classification up to class level

### **STRUCTURAL ORGANISATION IN PLANTS**

- i. Morphology and modifications of root, stem, and leaf,  
Inflorescence and flower structure, Fruits and seeds
- ii. Anatomy of plants : dicot and monocot- stem, root, leaf,  
Primary and secondary growth,
- iii. **Families (Angiosperms):**Fabaceae, Solanaceae, Liliaceae,  
Poaceae

### **STRUCTURAL ORGANISATION IN ANIMALS**

- i. Morphology, anatomy, and functions of systems in: **Earthworm**,  
Frog, **Cockroach**

### **HUMAN PHYSIOLOGY**

- i. Digestion and absorption,
- ii. Breathing and exchange of gases,
- iii. Body fluids and circulation
- iv. Excretion and osmoregulation,
- v. Locomotion and movement,

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- vi. Neural control and coordination.
- vii. Chemical coordination (Endocrine system: Human)

### **GENETICS AND EVOLUTION**

- i. Mendelian inheritance, gene mapping, quantitative genetics, chromosomal theory of inheritance.
- ii. Sex Determination
- iii. Mutation and Genetic Disorders
- iv. Molecular basis of inheritance (DNA, RNA, Replication, Transcription, Translation, Genetic Code, Regulation of Gene expression, Human Genome Project and DNA finger printing)
- v. **Evolution:** Origin of Life, Adaptive radiations, Parallel evolution, Darwin's theory, Modern synthetic theory, Hardy-Weinberg principle, Evolution of Man.

### **BIOLOGY AND HUMAN WELFARE**

- i. Human health and common diseases, Immunity and vaccines, Cancer, HIV/AIDS, Drug and Alcohol abuse

#### **ii. Improvement in food production**

Microbes in household products, industrial products, sewage treatment, production of biogas, microbes as biocontrol agents and as biofertilisers.

### **BIOTECHNOLOGY AND ITS APPLICATIONS**

- i. Genetic engineering (Recombinant DNA technology-Principles, tools and processes)
- ii. Applications in medicine and agriculture, Transgenic plants and animals, Biosafety ethics , bio patent, biopiracy.

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