

Shiksha Mandal's
Bajaj College of Science, Wardha
(An Autonomous College)
Department of Zoology
Syllabus for B.Sc. Zoology (Semester Pattern)
Credit Based System
Academic Session 2022-23
(As per BOS 12-04-2022)

B.Sc. Semester – III

Paper – III (Cell Biology & Environmental Biology)

UG-ZOO(07)-S3-T

UNIT – I **(12 Periods)**

- 1.1 Ultrastructure of Prokaryotic and Eukaryotic Cell.
- 1.2 Nucleus: Ultrastructure of Nuclear Membrane, Structure and Functions of Nucleolus.
- 1.3 Endoplasmic Reticulum: Types, Ultrastructure and Functions.
- 1.4 Golgi Complex: Ultrastructure and Functions.

UNIT – II **(12 Periods)**

- 2.1 Plasma Membrane: Structure- Fluid Mosaic Model and Functions.
- 2.2 Lysosome: Structure, Polymorphism and Functions .
- 2.3 Peroxisomes : Structure and Function.
- 2.4 Ribosome: Structure, Types, Lake's Model and Functions.

UNIT – III **(12 Periods)**

- 3.1 Ultrastructure Of Mitochondria & functions.
- 3.2 Concept of Heterochromatin. Euchromatin; Chromosome: Structure and Types.
- 3.3 Structure of Nucleosome.
- 3.4 Giant Chromosomes: Lamp-Brush and Polytene Chromosome.

UNIT - IV **(12 Periods)**

- 4.1 Microtubules: structure , function and its formation.
- 4.2 Microfilaments; intermediate filament.
- 4.3 Cell Cycle, introduction to Check points of Cell Cycle.
- 4.4 Mitosis.

UNIT – V **(12 Periods)**

- 5.1 Meiosis (Different Phases and Significance).
- 5.2 Elementary Idea of Cancer, properties of cancer cell, types of cancer and causes of cancer.
- 5.3 Types of Stem Cell.
- 5.4 Introduction to Animal Cell Culture.

UNIT - VI

(12 Periods)

- 6.1 Concept & Types of Ecosystem.
- 6.2 Structure of Ecosystem: Abiotic factors and Biotic factors; Producer, Consumer , Decomposer.
- 6.3 Food Chain , Food web; Ecological Pyramids.
- 6.4 Concept of Biodiversity; Hot Spots of Biodiversity.

Practical III Based on Cell Biology & Environmental Biology :-

UG-ZOO(07)-S3-P

Section - A (Practical based on Cell Biology)

1. Principle and working of light microscope.
2. Use of Ocular Micrometer and Measurement of any micro objects.
3. Study of Slide of Prokaryotic Cell & Eukaryotic Cell .
4. Study of Osmosis in any Cell.
5. Identification of Stages of Mitosis.
6. Principles and Working of Centrifuge.
7. Isolation, Separation of Cell Organelle – Nucleus Mitochondria.
8. ATC Laboratory set up.
9. Primary Cell culture.
10. Lymphocyte Separation.
11. Cell Count.
12. Cell Viability.

Section B (Practical based on Environmental Biology)

1. Estimation of Dissolved oxygen in water samples.
2. Estimation of free CO₂ in water samples.
3. Study of Pond ecosystem – Producer, Consumer and Decomposer.
4. Identification of common animals in your surroundings and classification based on Tropic Level of different ecosystem (Producer, Consumer and Decomposer); Preparation of Diary.

Distribution of Marks -

Total Marks 30

1.	Identification and comment on spots (3 Cell Biology, 1Environmental Biology)	04
2.	Experiment on Cell Biology	06
3.	Experiment on Environmental Biology	04
4.	Experiment of Cell Viability	03
5.	Submission of certified practical record	05
6.	Submission of Field diary	04
7.	Viva voce	04

Reference Books on :-

Cell Biology

1. C.B. Powar, Cell Biology – Himalaya Publication, New Delhi.
2. Dr. S.P. Singh, Dr. B.S. Tomar – Cell Biology 9th revised edition, Rastogi Publication, Meerut
3. Gupta P.K. – Cell and Molecular Biology, Rastogi Publication, Meerut.
4. Veer BalaRastogi – Introduction to Cell Biology, Rastogi Publication, Meerut .
5. Gerald Karp – Cell and Molecular Biology-Concepts and Experiments, John Wiley, 2007.
6. De-Robertis – Cell Biology .
7. Verma and Agrawal– Concepts of Cell Biology .
8. Dowben– Cell Biology.
9. Witt – Biology of Cell.
10. Ambrose and Eastyr – Cell Biology.
11. P.S.Verma&V.K.Agrawal - Cell Biology, Genetics, Molecular Biology, Evolution & Ecology.
12. Odum - Ecology.