

**BSC ZOOLOGY I SEMESTER**  
**[July 2018- December 2018 (ESE Winter 2018)]**

CODE	DESCRIPTION	PD/W	EXAM	CIA	ESE	TOTAL
BSZO 111	TAXONOMY OF LOWER NON CHORDATE	3	3hrs	20	80	100
BSZO112	CYTOLOGY AND GENETICS I	3	3hrs	20	80	100
BSZO121	ZOOLOGY LAB I	6	3hrs	20	80	100
TOTAL				60	240	300

**BSZO 111 TAXONOMY OF LOWER NON CHORDATE**

**UNIT- I**

- Taxonomy
  - General principle
  - Need of classification
  - Basis of classification
  - System of classification
  - Binomial and trinomial nomenclature
  - Significance of classification
- Five kingdom concept
- Concept of Protozoa & Metazoa
- Basis of classification- Level of body organization, Coelom, Symmetry, Segmentation
- Embryogeny
  - Diploblastic & Triploblastic
  - Protostomia & Deuterostomia

**UNIT-II**

- General characters and classification upto orders with suitable examples and economic importance of each Phyla
  - Protozoa
  - Porifera
  - Coelenterata
  - Ctenophora
  - Platyhelminthes
  - Aschelminthes
  - Annelida
  - Arthropoda
  - Mollusca
  - Echinodermata

**UNIT III**

***Paramecium***

- Locomotion- Ciliary beat, Mode of swimming
- Nutrition- Food and feeding, Digestion, Egestion
- Reproduction- Transverse Binary Fission, Conjugation, Autogamy, Cytogamy, Endomixis, Cytoplasmic particles

***Plasmodium***

- Life cycle- asexual and sexual
- Symptoms and pathogenesis
- Malaria – control measures

***Sycon***

- Cellular Organization- Different types of cells
- Canal System -
  - **Types** of canal System in **sponges**
  - Significance
- Reproduction-
  - Asexual
  - Sexual
    - Spermatogenesis
    - Oogenesis
    - Fertilization
- Development –
  - Early Embryonic Period –Cleavage, Stomoblastula
  - Larval Period- Amphiblastula, Gastrula
  - Metamorphosis

#### UNIT IV

##### *Obelia*

- Sense Organs - Statocyst
- Reproductive System & Life Cycle
  - Sexual Reproduction
  - Fertilization
  - Development - Cleavage
  - Planula larva
  - Alternation of Generation
- Polymorphism - Definition & Origin
  - Two Basic Forms-
    - Polyp
    - Medusa
  - Pattern-
    - Dimorphic
    - Trimorphic
    - Polymorphic
  - Significance
- Coral- Structure of Coral Polyp
- Coral Reef-
  - Kinds-
    - a) Fringing
    - b) Barrier
    - c) Atoll
  - Economic Importance

#### UNIT V

##### *Taenia*

- Reproductive System -Male Reproductive System, Female Reproductive System
- Development & Life Cycle-
  - Copulation & Fertilization
  - Capsule Formation
  - Formation of Onchosphere
  - Hexacanth
  - Cysticercus
  - Infection of Primary Host Man

##### *Hirudinaria*

- Digestive System-Alimentary Canal , Food and feeding, Digestion
- Haemocoelomic System-Haemocoelomic Channels, Course of Haemocoelomic Fluid Circulation
- Reproductive System-Male Reproductive System, Female Reproductive System
- Life History & Development
  - Copulation
  - Fertilization
  - Cocoon Formation and development

#### BSZO112 - CYTOLOGY AND GENETICS I

##### UNIT-I

- Cell and cell Theory
- Prokaryotic & eukaryotic cells
- Bacteria
  - i. Structure
  - ii. Types on the basis of shape and flagella
  - iii. Gram positive and Gram negative bacteria
  - iv. Reproduction in Bacteria
    - Asexual (Binary Fission, Budding, Conidia, Endospore, Antrospore)
    - Sexual reproduction (Transformation, Transduction, conjugation),
- General Structure and characteristics of Virus (TMV, Phage)
- Elementary study of Microscopy
  - i. Resolution and resolving power
  - ii. Principle and application of the light microscope
  - iii. Phase contrast microscope and interference microscope
  - iv. Fluorescence microscope
  - v. Electron microscope (Scanning electron microscope and transmission electron microscope)

##### UNIT-II

- Cell membrane
  - i. Characteristic of cell membrane

- ii. Fluid mosaic model
- iii. Concept of unit membrane
- iv. Membrane molecules (lipids, carbohydrates and proteins)
- Transport across cell membrane
  - i. Passive
  - ii. Facilitated
  - iii. Active transport (Na<sup>+</sup> and K<sup>+</sup> pump)
  - iv. Symport and Antiport transporter
  - v. Pinocytosis
  - vi. Phagocytosis
  - vii. Exocytosis
  - viii. Endocytosis
    - Carrier mediated Endocytosis

#### UNIT-III

Cell Organelles- Structure, Composition and Functions of

- i. Endoplasmic reticulum (RER and SER)
- ii. Golgi complex
- iii. Lysosomes
- iv. Ribosomes
- v. Centrioles
- vi. Mitochondria

#### UNIT-IV

- Cell cycle
- Mitosis-
  - Phase and steps in division
  - Spindle fibers and their functions
- Meiosis-
  - Phases and steps
  - Synaptic membrane complex
  - Chiasmata and crossing over

#### UNIT-V

- Brief History of Genetics
- Mendelism-Selection of pea plant, Mendelian laws and their significance
- Recombination
- Linkage
- ABO blood group and its genotype

#### BSZO121: ZOOLOGY LAB I

- A. Dissections - Earthworm – Nervous System, Nerve Ring, Spermatheca & Nephridia and **ovary**
- B. Microscopic Preparation - Sponge Spicules, Gemmules, *Obelia* Colony, *Neries* Parapodium
- C. Identification And Systematic Position upto order of Following Museum Specimens-  
 Protozoa- *Paramecium*, *Trypanosoma*, *Noctiluca*, *Opalina*, *Balantidium*, *Nyctotherus*, *Entamoeba*.  
 Porifera- *Sycon*, *Hyalonema*, *Euplectella*, *Euspongia*, *Spongila*  
 Coelentrata- *Physalia*, *Porpita*, *Rhizostoma*, *Alcyonium*, *Corallium*, *Gorgonia*, *Pennatula*, ***Aurelia***, ***Madrepora***,  
***Metridium***.  
 Platyhelminthes- *Fasciola*, *Taenia*, *Dugesia*, *Schistosoma*  
 Aschelmenthes- *Ascaris*, *Trichinella*, *Dracunculus*, *Wucheria*
- D. Study Of Prepared Slides- T.S *Sycon*, L.S *Sycon*, *Ephyra* Lrava, Mature & Gravid Proglottid of *Taenia*, Hexacanth , cysticercus larva ( bladder worm ) T.S of *Taenia* .
- E. Experimental Zoology –
  1. **Test for Carbohydrate, Protein and Lipid**
  2. **Determination of quality of milk – MBRT test and phosphatase test**
  3. **Detection of presence of urea and starch in milk**
  4. **Detection of adulteration in ghee and oil**

#### Distribution of Marks

- 1. Dissection
- 2. Microscopic Preparation
- 3. Spots (6 x 4)
- 4. Experimental Zoology
- 5. Year Work/ Practical Record (CIA\*)
- 6. Practical Class Test (2 x 5 Marks each) (CIA)
- 7. Viva Voice

#### Marks Allotted Time duration 3hrs

Distribution of Marks	Marks Allotted	Time duration 3hrs
1. Dissection		18
2. Microscopic Preparation		12
3. Spots (6 x 4)		24
4. Experimental Zoology		16
5. Year Work/ Practical Record (CIA*)		10
6. Practical Class Test (2 x 5 Marks each) (CIA)		10
7. Viva Voice		10
Total		100

### **Suggested Readings**

1. Principles Of Animal Taxonomy – G.G Simpson- Oxford and IBH Publication.
2. The Invertebrates – McNeill Alexander – Cambridge University Press
3. The Invertebrate Structure And Function – EJW Barrington- Thomas Nelson and Sons
4. Text Book Of Zoology By T. J Parker And W.A Haswell- Vol I – Mcmillan and Co, London
5. Invertebrates- Protozoa To Echinodermata Ashok Sharma – Narosa Publishing House
6. The Invertebrates- Vol I- VI –L.H Hyman – McGraw Hill Co.
7. A Text Book of Zoology – Invertebrates –Vishwanath – S Chand and Co, New Delhi
8. Invertebrate Zoology- E.L Jordan , P.S.Verma – S.Chand and Co, New Delhi
9. A textbook of Modern Zoology: Invertebrates- R.L. Kotpal – Rastogi Publication
10. Theory and Practices of Animal Taxonomy- VC Kapoor – Oxford and IBH Publication.
11. Genetics – P.K Gupta, Rastogi Publication
12. Molecular Cell Biology – Lodish, K. *Et. Al.* - Freeman Publication
13. Cytology Genetics And Evolution - P.K.Gupta -Rastogi Publication
14. A Text Book Of Practical Zoology – Invertebrates – By S.S.Lal – Rastogi Publication, Merrut
15. A Manual Of Practical Zoology – P.S. Verma, Tyagi, Agarwal- S Chand Publication