

BSC ZOOLOGY II SEMESTER
[January 2019- June 2019 (ESE Summer 2019)]

CODE	DESCRIPTION	PD/W	EXAM	CIA	ESE	TOTAL
BSZO 211	EVOLUTION AND BIOLOGY OF HIGHER NON CHORDATE	3	3hrs	20	80	100
BSZO212	MOLECULAR BIOLOGY AND GENETICS II	3	3hrs	20	80	100
BSZO221	ZOOLOGY LAB II	6	3hrs	20	80	100
TOTAL				60	240	300

BSZO 211 EVOLUTION AND BIOLOGY OF HIGHER NON CHORDATE

Unit I

- Origin of Life
- Natural Selection
- Genetic Basis of Evolution- Hardy-Weinberg Law
- Evidences of Organic Evolution

Unit II

- Variation
- Isolation
- Adaptation
- Geological Time Scale and Distribution of Animals in Different Era

Unit III

- Origin and Evolution of *Horse*
- Extinct Animals-
 - a) Dinosaurs
 - b) *Archaeopteryx*

Unit IV

- *Palaemon*
 - a) Appendages
 - b) Digestive System
 - c) Respiratory System
 - d) Blood Vascular System
 - e) Sense Organs
 - f) Reproductive System & Reproduction
 - g) Economic importance

Unit V

- *Pila*-
 - a) Digestive System
 - b) Respiratory System
 - c) Blood Vascular System
 - d) Reproductive System and Reproduction
- *Asterias*-
 - a) Water Vascular System
 - b) Reproductive System
 - c) Life History and Developmental Stages
 - d) Regeneration

BSZO212 MOLECULAR BIOLOGY AND GENETICS II

Unit I: Nuclear Organization:

- a) Structure and function of Nuclear Envelope,
- b) Nuclear matrix and Nucleolus
- c) Chromosome Morphology
 - Chromonema
 - Chromomeres
 - Telomere
 - Chromatids
 - Primary and Secondary constriction
- d) Chromosomes Types-
 - Polytene chromosomes
 - Lampbrush chromosomes

Unit II: DNA

- Structure
- DNA Replication
 - Semi conservative mechanism of replication
 - Enzymes involves in Replication-

- Topoisomerase, Polymerase, Single Stabilizing Binding Protein (SSBP), RNA primase.
- Okazaki fragments
- Replication Forks-Leading and Lagging Strands

Unit III: RNA-

- Structure
- Types
- Transcription of RNA in prokaryotes and eukaryotes
- Genetic Code
- Translation in prokaryotes and eukaryotes

Unit IV: Chromosomal Aberration:-

- Structural-
 - Translocation
 - Inversion
 - Deletion
 - Duplication
- Numerical-
 - Aneuploidy-
 - Hypo – Monosomy, Nullisomy, Double Monosomy
 - Hyper- Trisomy, Double Tetrasomy and Polysomy
 - Euploidy-
 - Monoploidy & Polyploidy.
- Gene mutation

Unit V: Gene Interactions-

- Supplementary
- Complimentary
- Epistasis
- Gene Expression
- Lethal Genes
- Pleiotropic Genes and Multiple Gene

BSZO221: ZOOLOGY LAB II

- Dissections - *Palaemon* – General Anatomy, Study of Appendages, Digestive System, Nervous System.
- Microscopic Preparation- *Palaemon*- Hastate Plate, Statocyst, Pollen basket of honey bee, Mosquito mouth parts, *Cyclops*, *Daphnia*
- Identification And Systematic Position up to order Of following Museum Specimens-
Annelida- *Nereis* and *Heteronereis* Phase, *Aphrodite*, *Pheretima*, *Hirudinaria*
Onchyophora-*Peripatus*
Arthropoda- *Limulus*, *Aranea*, *Palaemon*, *Apus*, *Lepas*, *Balanus*, *Sacculina*, *Schistocerca*, *Pediculus*, *Lobster*, *Eupagurus*, *Cancer*, *Lepisma*, *Papilio*, *Bombyx*, *Apis*, *Julus*, *Scolopendra*, ***Termite*, *wasp*, *termite soldier*, *Palameneous*, *life history of Periplaneta*, *Squilla*.**
Mollusca- *Chiton*, *Mytilus*, *Ostrea*, *Teredo*, *Nautilus*, *Octopus*, *Pila*, ***Sepia*, *Dentalium*, *Murex shell*, and *Patella*.**
Echinodermata- *Pentaceros*, *Ophiothrix*, *Echinus*, *Holothuria*, *Antedon*
- Study of Prepared Slides-
Annelida- T.S *Nereis* and *Hirudinaria* from Various Regions, Trocophore Larva Parapodia of *Nereis* and *Heteronereis*
Arthropoda Larval Forms- Nauplius, Zoea, Megalopa, Mysis
Mollusca - Glochidium Larva
Echinodermata- Pedicellariae
- Experimental Zoology
 - Immunological detection of blood groups***
 - To calculate genetic variation in a population using Hardy – Weinberg’s law.***
 - Genetic exercise based on genetic interaction.***

Distribution of Marks

- Dissection
 - Microscopic Preparation –
 - Spots – (5 x 4)
 - Experimental zoology
 - Year Work/ Practical Record – (CIA)
 - Practical Class Test - (2 x 5 Marks) (CIA)
 - Viva Voice -
- Total

Marks Allotted Time duration 3hrs

- 22
12
20
16
10
10
10
100

Suggested Readings

1. The Invertebrates – M. Alexander – Cambridge University Press
2. The Invertebrate Structure And Function – E.J.W. Barrington- Thomas Nelson And Sons
3. Text Book Of Zoology By T.J Parker And W.A Haswell- Vol I – Mcmillan And Co, London
4. Invertebrates- R.L. Kotpal – Rastogi Publication
5. A Text Book of Zoology – Invertebrates –Vishwanath – S Chand And Co.
6. Invertebrate Zoology- E.L Jordan , P.S.Verma – S.Chand And Co, New Delhi
7. Invertebrates- Protozoa To Echinodermata Ashok Sharma – Narosa Publishing House
8. The Invertebrates- Vol I- VI –L.H Hyman – Mcgraw Hill Co
9. Genetics – P.K Gupta , Rastogi Publication
10. Molecular Biology And Genetic Engineering (Paperback) - P.K Gupta , Rastogi Publication
11. Genetics And Molecular Biology - By Hyde D R, Publisher: Tata Mcgraw Hill Education Private Limited
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, Meerut
15. A Manual Of Practical Zoology – PS Verma, Tyagi, Agarwal- S Chand Publication