

UNIVERSITY OF KOTA, KOTA
SYLLABUS AND COURSE SCHEME
ACADEMIC YEAR: 2022-23
BACHELOR OF SCIENCE- ZOOLOGY SEMESTER II



B. Sc. Semester II

Z- 201. Paper I Animal Diversity - II (Arthropoda to Echinodermata)

Z- 202. Paper II Cell Biology and Microscopy

Z- 203 Practical: Exercise based on papers I and II.

Z - 201 Paper I-Animal Diversity - II (Arthropoda to Echinodermata)

Unit – I

1. General characters and classification of phylum - Arthropoda up to subclass.
2. Habit, habitat, external features, appendages, digestive, respiratory, circulatory, excretory, reproductive and nervous system and sense organs of Scorpion.
3. Habit, habitat, external features, appendages, digestive, respiratory, circulatory, excretory, reproductive and nervous system and sense organs of Prawn (*Palaemon*).

Unit – II

1. General characters and classification phylum - Mollusca up to subclass.
2. Habit, habitat, external features, coelom, general anatomy, digestive, respiratory, circulatory, excretory, reproductive systems, of *Pila*.
3. Habit, habitat, external features, coelom, general anatomy, digestive, respiratory, circulatory, excretory, reproductive systems Unio.

Unit – III

1. General characters and classification of phylum-Echinodermata up to subclass.
2. Habit, habitat, symmetry, external features, coelom, general anatomy, Digestive, respiratory, circulatory, excretory, water vascular, reproductive, nervous system and sense organs of star fish (*Asterias*).
3. Habit, habitat, symmetry, external features of *Octopus*.

Unit – IV

1. Larval forms of Crustacea.
2. Larval forms of Mollusca.
3. Larval forms of Echinodermata.

Unit – V General

1. Metamorphosis in Insects.
2. Torsion in Gastropoda.
3. Autotomy and regeneration in Echinoderms

Z - 202 Paper II Cell Biology and Microscopy

Unit-I

- (a) Introduction, Discovery of cell, cell theory, golden period of cytology, prokaryotic and eukaryotic cell, characteristics of animal cell.
- (b) Protoplasm: History, physical characters, colloidal property,
- (c) Chemical composition and Biological characters of protoplasm.

Unit- II

- (a) Structure, chemical composition and functions of plasma membrane, endoplasmic reticulum, ribosome, Golgi apparatus, lysosome.
- (b) Mitochondria, cilia and flagella.
- (c) Nucleus and nucleolus.

Unit III

- (a) Mitosis: cell cycle, mitotic apparatus, centriole, aster formation and its significance.
- (b) Meiosis: Introduction, Initiation, Significance and Control of meiosis, meiotic cycle, synapses and crossing over mechanism.
- (c) Gametogenesis: spermatogenesis and oogenesis.

Unit –IV

- (a) Nucleic Acid: - Molecular model, Duplication, properties and functions of DNA, Types of RNA, Nucleic Acid as Genetic material.
- (b) Nucleic Acid synthesis: Biosynthesis of DNA and RNA.
- (c) Genetic code, transcription and translation. Role of RNA; Regulation of protein synthesis.

Unit-V

- (a) Microscopy: Definition and types of microscopes.
- (b) Cytological techniques, Stains and Dyes.
- (c) Autoradiography.
- (d) Isolation of cell components.

Z - 203 Zoology- Practical

1. Study of animal diversity through museum specimens:

Arthropoda - *Peripatus*, *Limulus*, Spider, *Lepas*, crab, lobster, *Balanus*, *Sacculina*, *Lepisma*, moth, butterfly, rice weevil, centipede, millipede, locust, cyclops.

Mollusca - *Chiton*, *Neopilina*, *Patella*, *Aplysia*, *Dentalium*, *Ostrea*, *Teredo*, *Loligo*, *Octopus*,

Nautilus, Mytilus, pearl oyster.

Echinodermata - *Antedon, Cucumaria, Echinus, Astropecten, Ophiothrix, Holothuria*.

2. Study of sections of organs and developmental stages:

Arthropoda - Larval stages: *Nauplius, Zoea, Megalopa, Mysis, Cypris* larva, mosquito larvae and instars of flies. Book lung, trachea, malpighian tubule, pecten (scorpion),

Mollusca - Veliger and glochidium larvae. Section of *Unio* through different regions, *Unio* gill T.S.

Echinodermata - Pedicellaria, Pluteus larva, Bipinnaria larva.

3. Demonstration of Dissections: Through Chart / Model / Photograph / CD

a. Major -

Palaemon - digestive and nervous system.

Scorpion - digestive, reproductive and nervous system.

Pila - general anatomy, nervous system.

Unio - nervous system.

b. Minor -

Palaemon - hastate plate, appendages, alimentary canal and statocyst.

Scorpion - appendages, book lungs.

Pila - gill lamella, radula, osphradium and pallial complex.

Unio - gill lamella and pallial complex.

4. Permanent slide preparation:

Daphnia, Cyclops, Mosquito larvae, crustacean larvae, book lung of scorpion, statocyst and hastate plate of prawn. Mouth parts, wings, appendages and salivary glands of cockroach and Honey bee. Gill lamella, radula and osphradium of *Pila*. Gill lamella of *Unio* and glochidium larva.

5. Cell Biology

- (1) Cell Membrane permeability
- (2) Acetocarmine preparation of mitotic activity
- (3) Demonstration of mitochondria using vital stain.

B.Sc. (Semester-II) - Zoology Practical Exam Distribution of Marks

Time 4 Hrs.

Max. Marks – 50

1. Demonstration of Major Dissection
(Through Chart / Model / Photograph / CD)

06

2.	Demonstration of minor Dissection (Through Chart / Model / Photograph / CD)	04
3.	Slide Preparation	05
4.	Exercise in Cell biology	05
5.	Spots (10)	20
6.	Record	05
7.	Viva-voce	05
	Total	50
