

**MODERN'S**

# Zoology

**B. Sc. PART-I  
(SEMESTER-II)  
FOR K.U.K./M.D.U./C.D.L.U.**

**(VOL. 1)**

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go green with mbd

# SYLLABUS

KURUKSHETRA UNIVERSITY

B.Sc. PART-I : SEMESTER-II (THEORY)-PAPER-I

LIFE AND DIVERSITY OF ANNELIDA TO ARTHROPODA AND GENETICS-I

External Marks : 45, Internal Assessment : 05

Time allotted : 3 Hours

Note : Nine questions are to be set in all and the candidates are required to attempt five questions including compulsory question.

1. Question 1 is compulsory consisting of 10 parts (1.0 mark each) covering the entire syllabus. Answer to each part should not exceed 20 words.
2. Out of remaining eight, four questions are to be set from each section A and B, possibly splitting them in parts. Candidate is required to attempt four questions, two from each section.

## SECTION-A

### 1. Phylum – Annelida :

- (i) General characters and classification up to order level;
- (ii) Biodiversity and economic importance of Annelida;
- (iii) Type study – *Pheretima* (Earthworm);
- (iv) Metamerism in Annelida;
- (v) Trochophore larva.

### 2. Phylum – Arthropoda :

- (i) General characters and classification up to order level;
- (ii) Biodiversity and economic importance of insects;
- (iii) Type study – Grasshopper.

## SECTION-B

3. Elements of **Heredity and variations**.
4. The varieties of **gene interactions**.
5. **Linkage and recombination** : Coupling and repulsion hypothesis, crossing-over and chiasma formation; gene mapping.
6. **Sex determination and its mechanisms** : male and female heterozygous system, genetic balance system; role of Y-chromosome, male haploidy, cytoplasmic and environmental factors, role of hormones in sex determination.
7. **Sex linked inheritance** : Haemophilia and colour blindness in man, eye colour in *Drosophila*, Non-disjunction of sex-chromosomes in *Drosophila*; Sex-linked and sex-influenced inheritance.
8. **Extra chromosomal and cytoplasmic inheritance** :
  - (i) Kappa particles in *Paramecium*.
  - (ii) Shell coiling in snails.
  - (iii) Milk factor in mice.

External Marks : 45, Internal Assessment : 05

Time allotted : 3 Hours

Note : Nine questions are to be set in all and the candidates are required to attempt five questions including compulsory question.

1. Question 1 is compulsory consisting of 10 parts (1.0 mark each) covering the entire syllabus. Answer to each part should not exceed 20 words.
2. Out of remaining eight, four questions are to be set from each section A and B, possibly splitting them in parts. Candidate is required to attempt four questions, two from each section.

**SECTION-A**

**1. Phylum – Mollusca :**

- (i) General characters and classification up to order level;
- (ii) Biodiversity and economic importance;
- (iii) Type study – *Pila*;
- (iv) Torsion and detorsion in Gastropoda;
- (v) Respiration and foot.

**2. Phylum – Echinodermata :**

- (i) General characters and classification up to order level;
- (ii) Biodiversity and economic importance;
- (iii) Type study – *Asterias* (Sea Star);
- (iv) Echinoderm larvae;
- (v) Aristotle's Lantern.

**3. Phylum-Hemichordata :** General characters; Type study of *Balanoglossus*.

**SECTION-B**

4. **Multiple allelism :** Eye colour in *Drosophila*; A, B, O blood group in man.
5. **Human genetics :** Human karyotype, Chromosomal abnormalities involving autosomes and sex chromosomes, monozygotic and dizygotic twins.
6. **Inborn errors of metabolism in man** (Alcaptonuria, Phenylketonuria, Albinism, Sickle-cell anaemia).
7. **Nature and function of genetic material;** Structure and type of nucleic acids; Protein synthesis.
8. **Eugenics, euthenics and euphenics;** spontaneous and induced (chemical and radiations) mutations; gene mutations; chemical basis of mutations; transition, transversion, structural chromosomal aberrations (deletion, duplication, inversion and translocation); Numerical aberrations (autopolyploidy, euploidy and polyploidy in animals).
9. **Applied genetics :** genetic counseling, pre-natal diagnostics, DNA-finger printing, transgenic animals.

# SYLLABUS

MAHARISHI DAYANAND UNIVERSITY

B.Sc. PART-I : SEMESTER-II (THEORY)-PAPER-I

LIFE AND DIVERSITY OF ANNELIDA TO ARTHROPODA AND GENETICS-I

Max. Marks : 50 + 5 (Internal assessment)

Time allotted : 3 Hours

**Note :** Nine questions are to be set in all and the candidates are required to attempt five questions including compulsory question.

1. Question 1 is compulsory consisting of 10 parts (1.0 mark each) covering the entire syllabus. Answer to each part should not exceed 20 words.
2. Out of remaining eight questions, two questions are to be set from each unit (I to IV), possibly splitting them in parts. Candidate is required to attempt four questions, selecting one question from each unit.

## UNIT-I

**Phylum – Annelida :**

1. General characters and classification up to order level;
2. Biodiversity and economic importance of Annelida;
3. Type study – *Pheretima* (Earthworm);
4. Metamerism in Annelida;
5. Trochophore larva : Affinities, evolutionary significance.

## UNIT-II

**Phylum – Arthropoda :**

6. General characters and classification up to order level;
7. Biodiversity and economic importance of insects;
8. Type study – *Periplaneta*.

## UNIT-III

9. Elements of **Heredity and variations**.
10. The varieties of **gene interactions**.
11. **Linkage and recombination** : Coupling and repulsion hypothesis, crossing-over and chiasma formation; gene mapping.

## UNIT-IV

12. **Sex determination and its mechanisms** : male and female heterozygous system, genetic balance system; role of Y-chromosome, male haploidy, cytoplasmic and environmental factors, role of hormones in sex determination.
13. **Sex linked inheritance** : Haemophilia and colour blindness in man, eye colour in *Drosophila*, Non-disjunction of sex-chromosomes in *Drosophila*; Sex-linked and sex-influenced inheritance.
14. **Extra chromosomal and cytoplasmic inheritance** :
  - (i) Kappa particles in *Paramecium*.
  - (ii) Shell coiling in snails.
  - (iii) Milk factor in mice.

LIFE AND DIVERSITY OF MOLLUSCA TO HEMICHORDATA AND GENETICS-III

Max. Marks : 50 + 5 (Internal assessment)

Time allotted : 3 Hours

Note : Nine questions are to be set in all and the candidates are required to attempt five questions including compulsory question.

1. Question number 1 is compulsory consisting of 10 parts (1.0 mark each) covering the entire syllabus. Answer to each part should not exceed 20 words.
2. Out of remaining eight questions, two questions are to be set from each unit (I to IV), possibly splitting them in parts. Candidate is required to attempt four questions, selecting one question from each unit.

UNIT-I

Phylum - Mollusca :

1. General characters and classification up to order level;
2. Biodiversity and economic importance;
3. Type study - *Pila*;
4. Torsion and detorsion in Gastropoda;
5. Respiration and foot.

UNIT-II

Phylum - Echinodermata :

6. General characters and classification up to order level;
7. Biodiversity and economic importance;
8. Type study - *Asteries* (Sea Star);
9. Echinoderm larvae;
10. Aristotle's Lantern.

Phylum - Hemichordata :

11. Type study : *Balanoglossus*.

UNIT-III

12. **Multiple allelism** : Eye colour in *Drosophila*; A, B, O blood group in man.
13. **Human genetics** : Human karyotype, Chromosomal abnormalities involving autosomes and sex chromosomes, monozygotic and dizygotic twins.
14. **Inborn errors of metabolism in man** (Alcaptonuria, Phenylketonuria, Albinism, Sickle-cell anaemia).

UNIT-IV

15. **Nature and function of genetic material**; Structure and type of nucleic acids; Protein synthesis, spontaneous and induced (chemical and radiations) mutations; gene mutations; chemical basis of mutations; transition, transversion, structural chromosomal aberrations (deletion, duplication, inversion and translocation); Numerical aberrations (autopolyploidy, euploidy and polyploidy in animals).
16. **Applied genetics** : Eugenics, eugenics and eugenics; genetic counseling, pre-natal diagnostics, DNA-finger printing, transgenic animals.

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