

SYLLABUS, TDC-II
RAMESHWAR MAHAVIDYALAYA, B. R. A. B. U, MUZAFFARPUR
ZOOLOGY (HONOURS) PAPER-III

Time: 3 Hours

Full Marks: 75

CHORDATA

Group-A

Objective type questions (1x15) with alternative short answer requiring questions (3x5)

Group-B

1. Origin and evolution of chordates.
2. Bionomics, general characters and classification of the following groups (living) upto orders- Protochordata, Cyclostomata, Pisces, Amphibia, Reptilia, Aves, and Mammalia.
3. **Study of the following types:**
4. (a) Urochordata- Herdmania and Salpa
5. (b) Cephalochordata- Amphioxus
6. (c) Cyclostomata- Petromyzon
7. (d) Pisces- (i) Scoliodon and Labeo or any bony fish
(ii) Distribution, general organization and affinities of Dipnoi.

Group-C

8. Amphibia- Neoteny
9. Reptilia- (i) Garden Lizard (ii) Feeding and biting mechanism in snakes
10. Aves- (i) Columba (ii) Flight adaptation in birds (iii) Origin of birds
11. Mammals- (i) Characters, distribution and affinities of Prototheria and Metatheria (ii) General organization of primates

Books:

1. Kotpal R.L, Vertebrates Zoology (Rastogi Pub)
2. Jordan EL & Verma PS, Vertebrate Zoology (S Chand Pub)
3. Edwin H Colbert, Evolution of vertebrates (WilleyEastern)

ZOOLOGY (HONOURS) PAPER-IV

Time: 3 Hours

Full Marks: 75

Group-A

Objective type questions (1x15) with alternative short answer requiring questions (3x5)

Group-B

Comparative Anatomy

Study of the following organ system in major vertebrate group.

- (i) Integument- its derivatives and functions
- (ii) Gastrointestinal tract
- (iii) Respiratory system
- (iv) Heart and aortic arches
- (v) Kidney, urinogenital tract and gonads

Group-C

Embryology

- (i) Fertilization
- (ii) Egg types and early cleavages
- (iii) Development of Amphioxus (up to the formation of Coelom)
- (iv) Development of chick (up to three germ layers)
- (v) Structure, development and function of extra embryonic membranes in chick
- (vi) Placenta in mammals-Development, types and functions
- (vii) Organogenesis of Heart, Brain and Eye in chick embryo

Books:

1. Edwin H Colbert, Evolution of vertebrates (Willey Eastern)
2. William S Hoar, General and comparative physiology (Prentice Hall of India)
3. Ramesh Mathur, Embryology (Anmol Publication)
4. PK Gupta, Cell and Molecular Biology
5. Dr KV Sastry. Developmental Biology (Rastogi Pub)
6. SK Kulshrestha, Comparative anatomy of Vertebrates (Anmol Pub)

PRACTICALS

Time: 6 Hours

Full Marks: 50

Dissection:(10 Marks)

1. (i) Scoliodon or any bony fish- Afferent and efferent branchial vessels; V, VII, and IX, X cranial nerve; Internal ear
(ii) Frog cranial nerves- V, VII, IX and X
(iii) Lizard- Arterial and venous system
(iv) Pigeon- Arterial and venous system, air sacs, flight muscles (with the origin and insertion of tendons)
(v) Mammals- Neck nerve and urino-genital organs

2. Mounting(5 Marks)

Ampulla of Lorenzini, Scales of fishes, feathers, blood film, Mounting of chick embryo (24 and 48 hours)

3. Permanent stained preparation of paraffin section provided (5 Marks)

4. Spotting 20 Marks

- (i) Museum specimen
- (ii) Slides- histology and Embryology
- (iii) Bones-Limb 1, Girdle 1, Skull 1, Vertebra 1

5. Record and field work (5 Marks)

6. Viva (5 Marks)

Books:

1. PS Verma, Advanced Practical Zoology (S Chand Pub)
2. Dr SS Lal, Text book of Practical Zoology (Rastogi Pub)
3. V Banerjee, A text book of Vertebrate Practical (Anmol Pub)

ZOOLOGY (GENERAL & SUBSIDIARY)

Group-A (Chordata)

1. **Bionomics:** General characters and classification (up to order) of living chordates of the following groups- Protochordates, Cyclostomata, Pisces, Amphibia, Reptilia, Aves, and Mammalia.
2. **Study of the following types**
 - (i) Urochordata-Herdmania (including retrogressive metamorphosis)
 - (ii) Cephalochordata- Amphioxus
 - (iii) Fishes-Scoliodon Type study: Differences with that of a bony fish
 - (iv) Reptilia- Biting and feeding mechanisms of snakes
 - (v) Aves- Columba: Flight adaptation, elementary idea of bird migration and sanctuaries if India
 - (vi) Mammals- Characters, distribution and affinities of Prototheria and Metatheria
3. Comparative study of the following in vertebrates: Integument, Heart, Aortic Arches and Brain

Group-B (Embryology)

1. (i) Types of vertebrate eggs and their early cleavage,
(ii) Development of the Amphioxus (Up to the formation of Coelom) and chick (Up to three germ layers)
(iii) placenta in mammals- Their development, types and functions
2. **Biochemistry, Physiology and Endocrinology**
 - (i) Structure and classification of protein, carbohydrates and fats
 - (ii) Physiology of Digestion, Excretion and Respiration in mammals
 - (iii) Histology of the following Endocrine glands in mammals: Islet of Langerhans, Testis, Ovary, Thyroid, Adrenal and Pituitary

Books:

1. Kotpal R.L, Vertebrates Zoology (Rastogi Pub)
2. Jordan EL & Verma PS, Vertebrate Zoology (S Chand Pub)
4. Ramesh Mathur, Embryology (Anmol Publication)
5. Dr KV Sastry. Developmental Biology (Rastogi Pub)
6. PS Verma, Chordate Embryology, (S Chand)
7. Ramesh Mathur, Embryology (Anmol Pub)

PRACTICALS

Time: 6 Hours

Full Marks: 25

1. Dissection (7 Marks)

Scoliodon- Afferent and efferent branchial arteries, Cranial Nerves (IV, VII, IX & X), Internal ear, Eye muscles & their nerve supply, Urinogenital system

Columba-Flight muscle, arterial and venous system

2. Mounting (Permanent stained preparation) 4 Marks

Scales of fishes, Pecten & Filoplume feathers of birds, Ampulla of Lorenzini

3. Spotting (6 Marks)

Museum specimen-1, Bones- 3 (Limb, Girdle, Skull, Vertebrae of Varanus and Fowl)

4. Endocrinology and Embryology (2X2= 4 Marks)

Identification of permanent slides of the various developmental stages of Frog and Chick.

5. Practical record (4 Marks)

Books:

1. PS Verma, Advanced Practical Zoology (S Chand Pub)
2. Dr SS Lal, Text book of Practical Zoology (Rastogi Pub)
3. V Banerjee, A text book of Vertebrate Practical (Anmol Pub)