

"Education for Knowledge, Science and Culture"
-Shikshanmaharshi Dr. Bapuji Salunkhe
Shri Swami Vivekanand Shikshan Sanstha's
VIVEKANAND COLLEGE (AUTONOMOUS), KOLHAPUR
B. Sc. Part – I CBCS Syllabus with effect from June, 2018
ZOOLOGY-DSC -1008A
Semester: I Zoology-Paper- I
ANIMAL DIVERSITY
Theory: 60 Hours - (75 lectures of 48 minutes) Credits -4

Section-I

UNIT 1:

Importance of Animal taxonomy	2
Kingdom Protista	3
General characters and classification up to classes; Types of Nutrition in Protozoa	
Phylum Porifera	3
General characters and classification up to classes; Canal System in <i>Sycon</i>	
Phylum Cnidaria	3
General characters and classification up to classes; Polymorphism in Hydrozoa	
Phylum Platyhelminthes	2
General characters and classification up to classes; Morphology of <i>Taenia solium</i> and its parasitic adaptations, Preventive measures and control measures	
Phylum Nematelminthes	3
General characters and classification up to classes; Life history of <i>Ascaris lumbricoides</i> and its parasitic adaptations, Preventive measures and control measures	

UNIT II

Phylum Annelida	3
General characters and classification up to classes; Metamerism in Annelida	
Phylum Arthropoda	4
General characters and classification up to classes; Mouth parts in Insects	
Phylum Mollusca	4
General characters and classification up to classes; Molluscan diversity with respect to snail and slug	
Phylum Echinodermata	3
General characters and classification up to classes; Water-vascular system in Asteroidea	

Section II

UNIT III

Protochordates	3
General features and Phylogeny of Protochordata,	
Agnatha	4

General features of Agnatha and classification of cyclostomes up to classes, Peculiar characteristics of Petromyzone and myxine

Pisces 4

General features and Classification up to orders; importance of osmoregulation in Fishes

Amphibia 4

General features and Classification up to orders; Parental care

UNIT IV

Reptiles 4

General features and Classification up to orders; Venomous and non-venomous snakes, Types of venoms and mode of action

Aves 6

General features and Classification up to orders; Flight adaptations in birds

Mammals 5

Classification up to orders

SUGGESTED READINGS

- Ruppert and Barnes, R.D. (2006). *Invertebrate Zoology*, VIII Edition. Holt Saunders International Edition.
- Barnes, R.S.K., Calow, P., Olive, P.J.W., Golding, D.W. and Spicer, J.I. (2002). *The Invertebrates: A New Synthesis*, III Edition, Blackwell Science
- Young, J. Z. (2004). *The Life of Vertebrates*. III Edition. Oxford university press.
- Pough H. *Vertebrate life*, VIII Edition, Pearson International.
- Hall B.K. and Hallgrimsson B. (2008). *Strickberger's Evolution*. IV Edition. Jones and Bartlett Publishers Inc.
- Kotpal R. L. Invertebrate zoology
- Kotpal R. L. Vertebrate zoology
- E.J. Jordan and P.S. Verma, Chordate zoology

ZOOLOGY-DSC -1008B

Semester: II Zoology-Paper- II

COMPARATIVE ANATOMY AND DEVELOPMENTAL BIOLOGY OF VERTEBRATES

Theory: 60 Hours - (75 lectures of 48 minutes) Credits -4

SECTION I

Unit I

Integumentary System 4

Derivatives of integument w.r.t. glands and digital tips

Skeletal System 3

Appendicular Skeletons

Digestive System	4
Brief account of alimentary canal and digestive glands	
Respiratory System	5
Brief account of Gills, lungs, air sacs and swim bladder	

Unit II

Circulatory System	4
Evolution of heart and aortic arches	
Urinogenital System	4
Succession of kidney, Evolution of urinogenital ducts	
Nervous System	3
Comparative account of brain	
Sense Organs	3
Types of receptors	

SECTION II

Unit III

Early Embryonic Development	10
Gametogenesis: Spermatogenesis and oogenesis w.r.t. mammals, vitellogenesis in birds; Fertilization: external (amphibians), internal (mammals), blocks to polyspermy; Early development of frog and humans (structure of mature egg and its membranes, patterns of cleavage, fate map, up to formation of gastrula); types of morphogenetic movements; Fate of germ layers; Neurulation in frog embryo.	
Late Embryonic Development	8
Implantation of embryo in humans, Formation of human placenta and functions, other types of placenta on the basis of histology; Metamorphic events in frog life cycle and its hormonal regulation.	

Unit IV

Control of Development	5
Fundamental processes in development (brief idea) – Gene activation, determination, induction, Differentiation, morphogenesis, intercellular communication, cell movements and cell death	
Chick embryology	7
Development of chick embryo up to 72 hours	

SUGGESTED READINGS

- Kardong, K.V. (2005) *Vertebrates' Comparative Anatomy, Function and Evolution*. IV Edition. McGraw-Hill Higher Education.
- Kent, G.C. and Carr R.K. (2000). *Comparative Anatomy of the Vertebrates*. IX Edition. The McGraw-Hill Companies.
- Hilderbrand, M and Gaslow G.E. *Analysis of Vertebrate Structure*, John Wiley and Sons.
- Walter, H.E. and Sayles, L.P; *Biology of Vertebrates*, Khosla Publishing House.
- Gilbert, S. F. (2006). *Developmental Biology*, VIII Edition, Sinauer Associates, Inc.,

Publishers, Sunderland, Massachusetts, USA.

- Balinsky, B.I. (2008). An introduction to Embryology, International Thomson Computer Press.
- Carlson, Bruce M (1996). Patten's Foundations of Embryology, McGraw Hill, Inc.

ZOOLOGY LAB(I) : DSC 1008A (Pr)

Semester: I

ANIMAL DIVERSITY

60 Hours (75 Lectures) Credits 2

1. Study of the following specimens:

Amoeba, Euglena, Plasmodium, Paramecium, Sycon, Hyalonema, and Euplectella, Obelia, Physalia, Aurelia, Tubipora, Metridium, Taenia solium, Male and female Ascaris lumbricoides, Aphrodite, Nereis, Pheretima, Hirudinaria, Palaemon, Cancer, Limulus, Palamnaeus, Scolopendra, Julus, Periplaneta, Apis, Chiton, Dentalium, Pila, Unio, Loligo, Sepia, Octopus, Pentaceros, Ophiura, Echinus, Cucumaria and Antedon, Balanoglossus, Herdmania, Branchiostoma, Petromyzon, Sphyrna, Pristis, Torpedo, Labeo, Exocoetus, Anguilla, Ichthyophis/Ureotyphlus, Salamander, Bufo, Hyla, Chelone, Hemidactylus, Chamaeleon, Draco, Vipera, Naja, Crocodylus, Gavialis, Any six common birds from different orders, Sorex, Bat, Funambulus, Loris

2. Study of the following permanent slides:

T.S. and L.S. of *Sycon*, Study of life history stages of *Taenia*, T.S. of Male and female *Ascaris*

3. Key for Identification of Venomous and non-venomous snakes

4. Preparation of Paramecium culture

5. Visit to sea shore or any water body / Natural history museum and submission of report

An “**animal album**” containing photographs, cut outs, with appropriate write up about the above mentioned taxa. Different taxa/ topics may be given to different sets of students for this purpose.

ZOOLOGY LAB (II): DSC 1008B (Pr)

Semester: II

COMPARATIVE ANATOMY AND DEVELOPMENTAL BIOLOGY OF VERTEBRATES

60 Hours (75 Lectures) Credits 2

1. Osteology:

- a) Disarticulated skeleton of fowl and rabbit

- b) Comparative study of Pectoral and pelvic girdle of amphibia to mammals
 - c) Mammalian skulls: One herbivorous and one carnivorous animal.
 - d) Demonstration of axial and appendicular skeleton of frog
2. Frog - Study of developmental stages - whole mounts and sections through permanent slides – cleavage stages, blastula, gastrula, neurula, tail bud stage, tadpole external and internal gill stages.
 3. Study of the different types of placenta- histological sections through permanent slides or Photomicrographs.
 4. Study of placental development in humans by ultrasound scans-Interpretation.
 5. Examination of gametes - frog/rat - sperm and ova through permanent slides or photomicrographs.
 6. Preparation of whole mount of chick embryo
 7. Visit to Artificial fish breeding centre or any hatchery centre and submission of report

SUGGESTED READINGS

- Ruppert and Barnes, R.D. (2006). *Invertebrate Zoology*, VIII Edition. Holt Saunders International Edition.
- Barnes, R.S.K., Calow, P., Olive, P.J.W., Golding, D.W. and Spicer, J.I. (2002). *The Invertebrates: A New Synthesis*, III Edition, Blackwell Science
- Young, J. Z. (2004). *The Life of Vertebrates*. III Edition. Oxford university press.
- Pough H. *Vertebrate life*, VIII Edition, Pearson International.
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- Hilderbrand, M and Gaslow G.E. *Analysis of Vertebrate Structure*, John Wiley and Sons.
- Walter, H.E. and Sayles, L.P; *Biology of Vertebrates*, Khosla Publishing House.
- Gilbert, S. F. (2006). *Developmental Biology*, VIII Edition, Sinauer Associates, Inc., Publishers, Sunderland, Massachusetts, USA.
- Balinsky, B.I. (2008). *An introduction to Embryology*, International Thomson Computer Press.
- Carlson, Bruce M. (1996). *Patten's Foundations of Embryology*, McGraw Hill, Inc.

Nature of Question Paper

- Instructions:** 1) All the questions are **compulsory**.
2) Answers to the two sections should be written in separate answer books.
3) Figures to the right indicate **full** marks.
4) Draw neat labeled diagrams **wherever** necessary.

Time : 3 hours

Total Marks: 80

SECTION-I

Q.1. Choose correct alternative. (8)

- | | | | | |
|-------|----|----|----|----|
| i) | A) | B) | C) | D) |
| ii) | A) | B) | C) | D) |
| iii) | A) | B) | C) | D) |
| iv) | A) | B) | C) | D) |
| v) | A) | B) | C) | D) |
| vi) | A) | B) | C) | D) |
| vii) | A) | B) | C) | D) |
| viii) | A) | B) | C) | D) |

Q.2. Attempt any Two. (16)

- A)
- B)
- C)

Q.3. Attempt any Four (16)

- A)
- B)
- C)
- D)
- E)
- F)

SECTION-II

Q.4. Choose correct alternative.

(8)

- | | | | | |
|-------|----|----|----|----|
| i) | A) | B) | C) | D) |
| ii) | A) | B) | C) | D) |
| iii) | A) | B) | C) | D) |
| iv) | A) | B) | C) | D) |
| v) | A) | B) | C) | D) |
| vi) | A) | B) | C) | D) |
| vii) | A) | B) | C) | D) |
| viii) | A) | B) | C) | D) |

Q.5. Attempt any Two.

(16)

- A)
- B)
- C)

Q.6. Attempt any Four

(16)

- A)
- B)
- C)
- D)
- E)
- F)

SCHEME OF MARKING (THEROY)

Sem.	Core Course	Marks	Evaluation	Sections	Answer Books	Standard of passing
I	DSC1008 A	80	Semester wise	Two sections each of 40 marks	As per Instruction	35% (28 marks)
II	DSC1008B	80	Semester wise	Two sections each of 40 marks	As per Instruction	35% (28marks)

SCHEME OF MARKING (CIE) Continuous Internal Evaluation

Sem.	Core Course	Marks	Evaluation	Sections	Answer Books	Standard of passing
I	DSC1008 A	20	Concurrent	-	As per Instruction	35% (7 marks)
II	DSC1008 B	20	Concurrent	-	As per Instruction	35% (7 marks)

SCHEME OF MARKING (PRACTICAL)

Sem.	Course	Marks	Evaluation	Sections	Standard of passing
I AND II	DSC1008 A (Pr)	50	Annual	As per Instruction	35% (18)
	DSC1008 B (Pr)				

***A separate passing is mandatory**