

**JYOTI NIVAS COLLEGE AUTONOMOUS
SYLLABUS FOR 2018 BATCH AND THEREAFTER**

Programme: B.Sc.

Semester: VI

**ZOOLOGY PAPER VII
ANIMAL PHYSIOLOGY AND ANIMAL BEHAVIOUR**

Course Code: 18VIZO7

No. of Hours: 45

COURSE OBJECTIVES:

- To get a clear perspective of the physiological mechanisms and related disorders of the human body.
- To have a strong foundation in the concepts of animal function and behavior.
- To provide practical skills in the basic aspects of biochemical analysis and physiological mechanisms
- To understand the change in body physiology during exercise
- To gain knowledge into the various innate and acquired behavioral aspects of animals.

LEARNING OUTCOMES:

- The students will possess an enhanced knowledge and appreciation of various physiological processes of animals in health and disease
- They will understand how these separate systems interact to yield integrated physiological responses to challenges such as exercise
- They will attain skill to perform, analyse and report on experiments and observations in physiology
- Demonstrate knowledge of key concepts in animal behaviour. Exhibit critical and integrative thinking skills, demonstrate ability to understand, stereotyped and acquired behaviour, communication among animals and insight learning
- They developed the skill to design, conduct and write a dissertation on related genetic topics and face a viva-voce that helped them in their further studies.

PART A -ANIMAL PHYSIOLOGY

UNIT I: HOMEOSTASIS

10 HRS

1. **Homeostasis and regulation:** Definition, meaning of internal environment, and the role of feedback mechanisms. **1 HR**
2. **Thermoregulation:** Thermoregulation in Endotherms and Ectotherms, Role of Hypothalamus in temperature regulation, Range of temperature tolerance. **2HRS**
3. **Osmoregulation:** Ionic balance in *Artemiasalina*, teleosts (fresh water and marine) Elasmobranchs and migratory eel. Water balance in turtle, camel and man **4 HRS**
4. **Endocrine regulation:** Hormonal interactions with reference to homeostasis – In relation to thyroid, parathyroid and adrenals **3 HRS**

UNIT II: LIFE PROCESSES- I

08 HRS

1. **Digestion:** Regulation of digestive secretions, Role of microorganisms in the digestion of Ruminants and Termites (Compartmentalization of stomach can be emphasized), Common gastro-intestinal disorders in man: - Hyperacidity, Ulcer, Jaundice. **4 HRS**
2. **Excretion:** Ammonotelism, Ureotelism and Uricotelism. Formation of Ammonia,

Urea and Uric acid, Disorders & Treatment: Nephritis-Glomerulo and pyelonephritis.
Dialysis-Types and its significance **4 HRS**
UNIT III: LIFE PROCESSES- II **08 HRS**

1. **Circulation:** Blood pigments and their role. Disorders – High and low B.P., Angina pectoris, Coronary thrombosis. Treatment- Angioplasty, Bypass surgery **3 HRS**
2. **Respiration:** Transport of respiratory gases- Transport of oxygen and the factors influencing it. Carbon dioxide transport-Hamburger's phenomenon, Oxygen dissociation curves and the factors influencing them.
Bronchial disorders: Effects of Tobacco smoking, Carbon mono-oxide poisoning.**5 HRS**

UNIT IV: CONTROL AND CO-ORDINATION **08 HRS**

1. Muscle contraction: Ultra structure of skeletal muscle – sarcomere and myofibril, Chemical composition, Physico- chemical changes during muscle Contraction-Sliding filament theory **4 HRS**
2. Exercise Physiology: Definition and types of Exercise Physiology. Changes occurring in Body during Exercise **2 HRS**
3. Physiology of nerve conduction: Membrane potential , origin and transmission of action potential – Axonal and synaptic **2 HRS**

PART B ANIMAL BEHAVIOUR

UNIT V: INTRODUCTION AND CONCEPTS **06 HRS**

1. Historical perception. Aims and Objectives of animal behaviour **1 HR**
2. Stereotyped behaviours: Taxes, Kineses, Reflexes, Instincts with suitable examples.**2 HRS**
3. Learned behaviour: Imprinting, Habituation, Trial and Error learning. Classical conditioning and insight **2 HRS**
4. Biological clock **1 HRS**

UNIT VI: COMMUNICATION AND SOCIAL ORGANIZATION **4 HRS**

1. Animal communication- Functions of Signals: odours, sound and light **2 HRS**
2. Social organization - Origin and evolution of social organisation in primate society. Eg. Monkey **2 HRS**

PRACTICAL VII
ANIMAL PHYSIOLOGY AND ANIMAL BEHAVIOR

DURATION: 3HRS/UNIT

NO. OF UNITS: 15

I. PHYSIOLOGY EXPERIMENTS: 6 UNITS

1. Detection of Organic constituents – Tests for glucose, starch and proteins.
2. Detection of Nitrogenous wastes -Tests for ammonia, urea and uric acid.
3. Estimation of Oxygen consumed by crab.
4. Estimation of Salt lost or gained by crab.

II APPLIED HUMAN PHYSIOLOGY 2 UNITS

Vitamin C estimation: Colourimetric method

Blood cell counting: RBC/WBC count

III. INSTRUMENTATION: 1 UNIT

Sphygmomanometer, dialysis unit, Hearing aid(Principle and applications)

IV ANIMAL BEHAVIOUR 2 UNITS

Drosophila: phototaxis and chemotaxis

IV PROJECT WORK – Project related to the subject 2 UNITS

Practical tests/repetition 2 UNITS

Note: 13 Practicals + 2 units for practical tests/repetition

REFERENCES:

PHYSIOLOGY:

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2. **ARORA M P**. 2000. ANIMAL PHYSIOLOGY, Himalaya publishing house.
3. **BERRY A K**. 1995. HUMAN PHYSIOLOGY WITH RELATED BIOCHEMISTRY, Emkay Publications.
4. **EMULSIESMITH et al**. 1988.A TEXT BOOK OF PHYSIOLOGY , ELBS Low prices Edition
5. **GANONG W F**. 1997. REVIEW OF MEDICAL PHYSIOLOGY, Appleton & Lange, 8th edition.
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9. **HOAR W. S**, 1984. GENERAL AND COMPARATIVE PHYSIOLOGY, Prentice Hall of India, New Delhi, 3rd edition.
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20. **WILSON J.A.**, 1972. PRINCIPLES OF ANIMAL PHYSIOLOGY. McMillan Publ., New York, 2nd edition

ANIMAL BEHAVIOUR

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23. **GIRISH CHOPRA AND GUPTA R.C**. 1989. Fundamentals of Ecology and Behavior, Chand & Co.
24. **HARJINDRA SINGH**. 2003. A text Book of Animal Behavior, 3rd rev & enlarged ed, Anmol Publ Pvt Lt
25. **REENA MATHUR**. 1996. Animal Behavior, Rastogi and company.
26. **THE COLLINS ENCYCLOPEDIA OF ANIMAL BEHAVIOR**. 1986. Edited by Professor Peter J.B Slater. William Collins Sons & Co Ltd.London, Glasgo, Sydney, Auckland, Toronto, Johannesburg.
27. **JOHN ALCOCK**. 1979. ANIMAL BEHAVIOUR – AN EVOLUTIONARY APPROACH, Sinauer Associates, Inc. Publ. 4th ed. Sunderland, Massachusetts