

SANT GADGE BABA AMRAVATI UNIVERSITY, AMRAVATI
SHRI PUNDLIK MAHARAJ MAHAVIDYALAYA, NANDURA (Rly.)
DEPARTMENT OF ZOOLOGY
B.Sc-III, SEMESTER-V
SYLLABUS
SUB: ANIMAL PHYSIOLOGY AND ECONOMIC ZOOLOGY

There shall be following paper and practical for B.Sc.Part-I Semester One examination. The syllabus is based on 6 theory periods and six practical periods per week (Total 75-80 theory Sessions and 25 practical sessions during the complete semester). There shall be one compulsory paper of 3 hours duration, in theory as stated below and practical examination extending for four hours. Every examinee shall offer the following paper of 100 marks, (Out of which 80 marks will be for written examination and 20 marks for internal assessments) and practical examination of 50 marks. Candidates are required to pass separately in theory and practical examination.

Marks

1) Paper-I: Animal Physiology and Economic Zoology...	
Theory (Written)	80
Internal assessments	20
2) Practical:	50
Total :	150 Marks

THEORY

UNIT-I :

Respiration: Structure of respiratory organs: Gills and Lungs Mechanism of respiration: regulation of ventilation in lungs, exchange of gases at respiratory surface, Respiratory pigments in animals: Haemoglobin, Haemocyanin, Haemerythrin, chlorocruorin. Transport of gases: O₂ and CO₂ transport, Neurophysiologic control of respiration,

Circulation: Blood : Definition and its constituents, functions of blood. Heart: Structure of human heart, pace maker, Cardiac cycle. Blood coagulation factors, blood groups A, B, O system and Rh-factor.

UNIT-II:

Muscle Physiology: Types of Muscles: striated, non-striated and cardiac muscles E.M. Structure and Chemical Composition of striated muscle, Neuromuscular junction. Mechanism of muscle contraction by Sliding filament theory Physical and Chemical changes during muscle contraction: muscle twitch, tetanus, isometric and isotonic contraction, summation of Stimuli, all or none law, fatigue, rigor mortis.

UNIT-III :

Nerve Physiology: Neuron: E.M. Structure of neuron and Types : Myelinated and non-Myelinated nerve fibres. Conduction of Nerve impulse, Resting potential, initiation and propagation of action potential, Saltatory transmission, Neurotransmitters (Acetylcholine, dopamine, GABA, Serotonin, Epinephrine, Nor-Epinephrine), Synapse and synaptic transmission

Chemical co-ordination: Endocrine system: Hormones and their physiological roles of Pituitary, Thyroid, Parathyroid, Adrenal, Islets of Langerhan's, Hormonal disorders: Dwarfism, Gigantism, Acromegaly , Goiter, Myxoedema, Cretinism, Osteoporosis ,

UNIT-IV :

Reproductive Physiology: Estrous and menstrual cycle, hormonal control of reproduction in males and female, Structure and physiology of mammalian Placenta.

Homeostasis and conservative regulation: Osmoregulation and ionic regulation in aquatic animals. Osmoregulation in terrestrial animals Ammonotelism, ureotelism and uricotelism. Thermoregulation in Poikilotherms and Homeotherms.

UNIT-V :

Agricultural Zoology: Economic importance of Insects Beneficial insects – Spider, Mantis, Ladybugs, Damsel bug, Mealybug destroyer, Soldier beetle, Green lacewing, Syrphid fly, Tachinid fly, Ichneumon wasp and Trichogramma wasp.

Harmful Insects – Stored food grain pests, their injuries and control Pests of, – Cotton, Sugarcane and Jowar. Damage and Control Economic importance of Rodents, Snakes, Owls and Bats. Apiculture - Sericulture –

UNIT-VI :

Aquaculture Aquaculture: definition, scope, importance and present status in India. Fresh water fish culture: types of fish ponds: Nursery, rearing and stocking, design and construction of fish pond, fertilizers used for fish development.

Hatching Hapas, Chinese Circular Hatchery, CIFE, Mumbai, hatching model, Induced breeding and hypophysation, Modern drugs used in fish breeding.

Freshwater system: monoculture, polyculture, integrated aquaculture, cage culture, pen culture. Fish products and byproducts: Fish liver Oil, Fish body oil, Fish manure, Fish leather

PRACTICALS

1. Detection of blood groups in human being.
2. Differential counts of blood.
3. Estimation of hemoglobin percentage with the help of haemometer.
4. R.B.C. count.
5. W.B.C. count.
6. Preparation of haemin crystals
7. Measurement of blood pressure.
8. Action of salivary amylase on starch.
9. Qualitative detection of nitrogenous waste products (Ammonia, urea, uric acid) in given sample.
10. Demonstration of kymograph unit, Respirometer through available resources.
11. Observation and identification of Insect Pests of local crops, and predator insects.
12. Life Cycles of Honey bee, Lac insect, Silk Moth.
13. Histological Slides of major organs of Respiratory systems, circulatory system, Nervous system, Different types of Muscles, Endocrine glands, testis, ovary.
14. Study of locally available fishes, Indian major carps, Exotic carps, Common carp.

Distribution of marks for practical examination :

Time: 5 Hrs.	Marks
01. Physiological Expt.	
a) Major.....	10
b) Minor	05
02. Economic Zoology & Histology	
a) Spotting (A-F).....	12
b) Description and Comments on Topic from Unit V and VI.....	08
04. Class record duly signed by teacher in charge and certified by H.O.D.....	05
05. Study tour report.....	05
06. Viva – voce.....	05
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	Total Marks.....50

References

1. Prosser and Brown : Comparative Animal Physiology
2. Histological Slides of Respirator systems, circulatory system, Muscles, Nervous system
Endocrine glands, Gonads, placentae
3. Guyton : Physiology
4. Best and Taylor : Physiological basis of Medical practice
5. C Hoar, W.S.. General and comparative Physiology. Prentice Hall of India.
6. Lehninger. L.. Biochemistry. W.H. Freeman & co.
7. Nagabushnam, R.. Animal physiology. S.Chand & co.
8. Martin, D.W. P.A. Mayes and W.W. Rodwell,.Harper's Review of Biochemistry lange
Medical Publications.
9. Prosser, C.L. and F.A.Brown Comparative Animal physiology. W.B. Saunders.
10. Rama Rao, A.V.S.S.. Biochemistry. UBSPD.
11. Stryer. L. Biochemistry Wiley International
12. Verma, P.S. and V.K. Agarwal.. Animal physiology. S.Chand & co.
13. Wilson, J.A., Principles of Animal Physiology, Macmillan
14. Chatterjee, C.J; Human Physiology(Vol-I and II)
15. Economic Zoology, G.S. Shukla, V.B. Upadhyay (2006)
16. Text Book of Applied Zoology, Pradip. V Jabde (2005).
17. Mac E. Hadley: Endocrinology, Prentice Hall, International Edition, 2000