

## **B.SC. FINAL, SEMESTER-V ZOOLOGY**

here shall be the following paper and practical for B.Sc. Part-III Semester V 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 a compulsory theory paper of 3 hours duration, as stated below and a practical examination extending for five hours. Every examinee shall offer the following paper of 100 marks (80 for written examination and 20 marks for internal assessment) and a practical examination of 50 marks. Candidates are required to pass separately in theory and practical examination.

### **Theory -5 S-ZOOLOGY: (ANIMAL PHYSIOLOGY AND ECONOMIC ZOOLOGY)**

Marks Allotted

1) Written examination..... 80

Internal assessment..... 20

2) Practical: 50

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Total: ..... 150 Marks

### **Paper 5 S-ZOOLOGY (ANIMAL PHYSIOLOGY AND ECONOMIC ZOOLOGY) Max. Marks - 100 Total Period - 75**

#### **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: O<sub>2</sub> and CO<sub>2</sub> 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:Nursary, rearing and stocking, design and construction of fish pond, fertilizers used for fish development. Hatching Happs, 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: (ANIMAL PHYSIOLOGY AND ECONOMIC ZOOLOGY)**

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 digestive enzymes in cockroach and crabs.
10. Qualitative detection of nitrogenous waste products in fish (Ammonia, urea, uric acid) in fish tank water, frog tank water, bird excreta and urine of mammal.
10. Use of, kymograph unit, Respirometer.
11. Collection and identification of Insect Pests of local crops, and predator insects.
12. Life Cycles of Honey bee, Lac insect, Silk Moth.
14. Histological Slides of major organs of Respiratory systems, circulatory system, Nervous system, Different types of Muscles, Endocrine glands, testis, ovary, placenta.
15. Study of locally available fishes, Indian major carps, Exotic carps, Common carp.
16. Dissection of Digestive system, Urinogenital system, Pituitary Gland of locally available fishes

**Distribution of marks for practical examination :**

**Time: 5 Hrs. Marks**

01. Physiological Expt.  
a) Major..... 10  
b) Minor ..... 05  
02. Economic Zoology  
a) Spotting (A-E) Based On Unit V and VI ..10  
b) Description and Comments on Topic from Unit V and VI /  
Dissection ...10  
04. Class record duly signed by teacher in charge and certified by  
H.O.D. ...05  
05. Study tour diary and collection of animals..... 05  
06. Viva - voce 05

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**Total Marks 50**