Department of Higher Education, Govt. of M.P.

Under Graduate Semester wise Syllabus

As recommended by Central board of Studies and Approved by H E the Governor of M.P.

B.Sc. V – VI Semester

Session 2018-19

Scheme of examination

S.No.	Semester	Paper	TopicofPaper	Max.Marks.		Total marks
				Theory	CCE	
1	Semester-V		Animal Physiology and Biochemistry	85	15	100
		Practical				50
2	Semester-VI		Ecology and Applied Zoology	85	15	100
		Practical				50

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Class -B.Sc. Semester -V

Subject -Zoology

Title of Paper-Animal Physiology and Biochemistry

Max. Marks 85

Unit I: Nutrition, Metabolism

1. Physiology of digestion in mammals
2. Protein Metabolism: Deamination, Decarboxylation. Transamination of amino acids, and Ornithine cycle.
3. Carbohydrate metabolism- Glycogenesis, Glycogenolysis, glycolysis, The Citric acid cycle, Gluconeogenesis.
4. Lipid Metabolism-Beta oxidation of fatty acids.

Unit II: Respiration Excretion and Immune System

1. Structure of mammalian lung.
2. Mechanism and of respiration in mammals (transport of gases, chloride shift).
3. Physiology of Excretion- urea and urine formation in mammals
4. Innate and acquired immunity, immune cells wsr. lymphocytes, NK cells, macrophages
5. Immune response: cellular and humoral response

Unit III: Regulatory Mechanisms and Enzymes

1. Thermoregulation.
2. Definition and nomenclature of enzymes, classification of enzymesand Co-enzymes.
3. Mechanism of enzyme action.
4. Elementary idea of Vitamins.

Unit IV: Neuromuscular Co- ordination

1. Introduction to functional anatomy of human brain
2. Types of neurons and glial cells
3. Physiology of nerve impulse conduction.
4. Types of Muscles.
5. Theory of muscle contraction and its biochemistry.

Unit V: Endocrine system and Reproductive system

1. Structure and functions of Pituitary Gland.
2. Structure and functions of Thyroid Gland.
3. Structure and functions of Adrenal Gland.
4. Structure and functions of Parathyroid, Thymus and Islets of langerhan's.
5. Physiology of Male reproductive organ and female reproductive organ wsr.to Spermatogenesis, Oogenesis, Menstrual Cycle

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Class -B.Sc. Semester -V

Practical Subject –Zoology

1. Detection of protein, carbohydrate and lipid.
2. Study of Human salivary enzyme activity in relation to pH.
3. Detection of nitrogenous waste products – Ammonia & Urea
4. Blood pressure measurements
5. Detection of Vitamin A and Vitamin C
6. Exercise on Haematology – Counting of RBC /WBC and Blood grouping in blood samples.
7. Estimation of Haemoglobin and sugar in blood samples.
8. Histological study of various endocrine glands –T. S. of Thyroid, T. S. of Pituitary gland, T. S. of Adrenal gland, T. S. of Testis, T. S. of Ovary.
9. Histological study of Alimentary canal & various digestive organs – T.S of Stomach, T.S of Intestine,T.S of Pancreas, and T. S. of liver.
10. Histological study of Visceral organs - T.S of Lungs, L.S. of Kidney
11. Histological study of Muscles – Striated, Unstriated & Cardiac muscle.

Distribution of Marks

Time 3 hours **Maximum Marks: 50**

	Marks Allotted
1. Spotting (10 Spots)	- 20Marks
2. Biochemical tests	- 05 Marks
3. Physiological Experiment (RBC/WBC Count/ Blood Group / Hb)	- 10 Marks
4. Exercise on enzyme activity	- 05 Marks
4. Viva-Voce.	- 05 Marks
5. Practical Record and Collection.	- 05Marks

Total **50 Marks**

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Class -B.Sc. Semester -VI

Subject -Zoology

Title of Paper-Ecology and Applied Zoology

Max. Marks 85

Unit-I Concept of Ecology:

1. Abiotic and biotic factors
2. Energy flow in ecosystem: Food chain and Food web
3. Biogeochemical cycle: Co2 N and P
4. Population Concept – Characteristics of population. Factors affectingPopulation growth, Pollution indicators.

Unit-II Habitat Ecology

1. Fresh water, marine and terrestrial habitat
2. Ecological division of India.
3. Biodiversity: Natural resources and their conservation with special reference to forests.

Unit-III Man and Environment

1. Wild life conservation (Laws , National Parks and Sanctuaries of MP)
2. Endangered species of India.
3. Types of pollution: Air, water, soil, thermal and noise pollution.
4. Urbanisation and effect of human population on environment.

Unit-IV Aquaculture

1. Prawn culture: Culture of fresh water prawn, methods of prawn fishing, preservation and processing of prawns
2. Pearl culture and pearl industry.
3. Frog culture: Breeding and selection.
4. Major carp culture: Management of ponds, preservation and processing of fishes.
5. Maintenance of Aquarium.

Unit-V Economic Entomology

1. Sericulture: Species of silkworm, life history of *Bombyx mori,* Sericulture Industry in India.
2. Apiculture – Life cycle of the species methods of bee keeping, products of bees, enemies of bees.
3. Lac culture: Lifecycle, and association with the host plant.
4. Common pests: Stored grains: *Sitophilus oryzae and Tribolium castanaeum,* Vegetable pest*: Pieris brassicae and Dacus cucurbitae.*
5. Biological control of insect pests.

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Class -B.Sc. Semester -VI

Practical Subject –Zoology

1. Study of fresh water, marine and terrestrial fauna
2. Water analysis- Dissolved oxygen, chloride, pH, hardness, turbidity and temperature
3. Pond ecosystem
4. Wild life: Endangered and threatened species
5. Study of specimen related to micro and mega evolution: Commensalism, Symbiosis, Mimicry, Parasitism, Colouration,etc.
6. Study of various fossils: Limulus, Latimera, Dinosaurs, Archaeopterux
7. Models of ecosystem
8. Study of life cycles of animals of economic importance-honey bee, silk moth, lac insect
9. Study of planktons
10. Study of pests-
    Agricultural pests – Grasshopper, Red cotton bug, Locust
    Medical pests –Mosquito, Pediculus
    Stored grain pests – Sitophilus oryzae and Tribolium castanaeum

Distribution of Marks

Time 3 hours	**Maximum Marks: 50**
1. Physicochemical analysis of water bodies	10
2. Exercise based on applied zoology (life cycles)	05
3. Exercise based on museum keeping techniques	05
4. Spotting	16
5. Models of ecosystem	04
6. Viva	05
7. Record	05
Total	**50**

Suggested Books for B.Sc. Zoology

Books of Granth Academy
Parker & Haswell: Text Book of Zoology Vol-I & II
Jordan, E.L. and Verma, P.S.: Chordata Zoology
Nigam, H.C.: Zoology of Chordates
Rastogi, V.B.: Developmental Biology
Arora, M.P.: Embryology
Karp: Cell and Molecular Biology
Sheelar& Bianchi: Cell and Molecular Biology
Lewin: Genetics (Latest edition Strickberger: Genetics
Berry, A.K. Animal Physiology and Biochemistry
Prosser: Comparative Animal Physiology
Lehninger: Biochemistry
Bisen, P.S. Laboratory Protocols in Applied Life Sciences
Bisen, P.S.: Introduction to Instrumentation in Life Sciences
Odum, E.P.: Fundamental Ecology
Agrawal, K.C.: Biodiversity
Colbert: Evolution
Natrajan, S.S.: A Manual; of Fresh Water Aquaculture
Sharma, P.D.: Environmental Biology & Toxicology
Swaroop & Pathak: Laboratory Techniques in Modern Biology