

19-20 (4)

KAKATIYA UNIVERSITY
U.G. ZOOLOGY (Under CBCS)
B.Sc. Final Year (DSE-1E)
SEMESTER – V

Elective

A) Applied Zoology (Theory)

Max. Marks:

UNIT – I

- 1.1. Types of Fisheries, culture of Fresh Water Fish and Prawn
- 1.2. Fresh water fishing gears and crafts; Induced Breeding.
- 1.3. Hatchery design and Management of fish and prawn, Transportation of fish and prawn seed.
- 1.4 Preservation, Processing and By-products of fishes.
- 1.5 Fish Diseases and control measures

UNIT – II


- 2.1. Life cycle of *Bombyx mori*
- 2.2 Structure of silk gland and secretion of silk
- 2.3 Silkworm rearing technology, Spinning, harvesting and storage of cocoons.
- 2.4 Silk worm Pests and Diseases: Uzi fly; Protozoan, Viral, Fungal and Bacterial; Control and prevention.
- 2.5 Prospects of Sericulture in India

UNIT – III

- 3.1 Selection of Bee Species for Apiculture. Bee Keeping Equipment.
- 3.2 Methods of Extraction of Honey (Indigenous and Modern). Bee Diseases and Enemies.
- 3.3 Products of Apiculture Industry and its Uses (Honey, Bees Wax).
- 3.4 Introduction of Vermiculture and Vermicomposting. Vermiculture techniques. Bedding, Essential parameters for Vermiculture and Management
- 3.5 Methods of Harvesting (Manual & Mechanical). Economic Importance of Vermiculture.

UNIT – IV

- 4.1. Classification of Fowls based on their use – Broilers and Commercial layers.
- 4.2. Principles of poultry breeding. Management of breeding stock and broilers. Processing and preservation of eggs.
- 4.3. Poultry diseases - Viral, Bacterial, Fungal, Protozoan
- 4.4. Management of a modern Poultry Farm, progressive plans to promote Poultry as a Self-Employment venture
- 4.5. Dairy farm and its management, Animal Husbandry – Introduction. Preservation of semen, artificial insemination of cattle. Induction of early puberty and synchronization of estrus in cattle.


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U.G. ZOOLOGY (Under CBCS)
B.Sc. Final Year (DSE-1F)
SEMESTER – VI

2018-19

Elective Paper – VIII

B) ~~Aquatic Biology (Theory)~~ ✓

Max. Marks: 60

~~Marine Biology~~

UNIT – I

- 1.1 Brief introduction of the aquatic biomes
- 1.2 Freshwater ecosystem (lakes, wetlands, streams and rivers), Estuaries, intertidal zones.
- 1.3 Oceanic pelagic zone, marine benthic zone.
- 1.4 Coral reefs

UNIT – II

- 2.1 Lakes Origin and classification of lakes, Lake as an Ecosystem, Lake morphometry,
- 2.2 Physico-chemical Characteristics of fresh water bodies: Light, Temperature, Thermal stratification, Dissolved Solids, Carbonate, Bicarbonates, Phosphates and Nitrates, Turbidity: dissolved gases (Oxygen, Carbon dioxide).
- 2.3 Nutrient Cycles and Lakes- Nitrogen, Sulphur and Phosphorous.
- 2.4 Streams: Different stages of stream development, Physico-chemical environment, adaptation of hill-stream fishes.

UNIT – III

- 3.1 Salinity and density of sea water,
- 3.2 Continental shelf,
- 3.3 Adaptation of deep sea organisms.
- 3.4. Sea weeds.

UNIT – IV

- 4.1 Aquatic pollution - Causes of pollution: Agricultural, Industrial, Sewage, Thermal and Oil spills,
- 4.2 Eutrophication
- 4.3 Management and conservation
- 4.4 Water pollution acts of India, Sewage treatment and water quality assessment - BOD and COD.



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B.Sc. Final Year (DSC-1E)
SEMESTER – V

Physiology and Biochemistry (Theory)

Max. Marks:

UNIT – I

2018-19


- 1.1 Digestion definition; extra and intracellular digestion; Digestion of Carbohydrates, Proteins, Lipids and Cellulose.
- 1.2 Absorption and Assimilation of digested food; Role of Gastrointestinal hormones in digestion
- 1.3 Definition of Respiration and Respiratory mechanisms – External, Internal and cellular, Respiratory Pigment, Transport of oxygen. Oxygen dissociation curves. Bohr's effect, Transport of CO₂ – Chloride shift, Regulation of respiration – nervous and chemical.
- 1.4 Types of circulation - Open and Closed circulation; Structure of Mammalian Heart, Types of hearts - Neurogenic and Myogenic.
- 1.5 Heart function – Conduction and regulation of heart beat, Regulation of Heart rate – Tachycardia and Bradycardia, Blood Clotting mechanism

UNIT – II

- 2.1 Classification of Animals on the basis of excretory products- Ammonotelic, Uricotelic, Ureotelic-
- 2.2 Structure and function of Nephron; Urine formation, Counter current mechanism.
- 2.3 Types of Muscles; Ultra structure of skeletal muscle fibre; Sliding Filament theory, muscle contraction mechanism and energetics.
- 2.4 Structure of Neuron- Nerve impulse - Resting potential and Action potential and Conduction of Nerve impulse
- 2.5 Synapse, types of synapses and Synaptic transmission.

UNIT – III

- 3.1 Endocrine glands - Structure, secretions and functions of Pituitary, Thyroid, Parathyroid, Adrenal glands and Pancreas
- 3.2 Hormone action and concept of Secondary messengers. Male and Female Hormones, Hormonal control of Menstrual cycle in humans.
- 3.3 Concept and mechanism of Homeostasis.
- 3.4 Osmoregulation - Water and ionic regulation by freshwater, brackish water and marine animals
- 3.5 Enzymes: Definition, Classification, Inhibition and Regulation.


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B.Sc. Final Year (PSC-1F)
SEMESTER - VI

Immunology and Animal Biotechnology (Practical)

Max. Marks: 25

I. Immunology

1. Identification of Blood groups
2. Histological study of spleen, thymus and lymph nodes (through prepared slides)
3. Enumeration of RBC & WBC from a given blood sample
4. Enumeration of Differential count of WBC from a given blood sample
5. Demonstration of
 - a. ELISA , b. Immunoelectrophoresis
6. Identification of Autoimmune disease through charts.

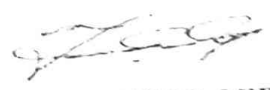
II. Animal Biotechnology

1. Study the following techniques through photographs / virtual lab
 - a. Southern blotting
 - b. Western blotting
 - c. DNA sequencing (Sanger's method)
 - d. DNA finger printing
 - e. Identification of Vectors
 - f. Identification of Transgenic animals
2. PCR demonstration / virtual lab

- Laboratory Record work shall be submitted at the time of practical examination
- Computer aided techniques should be adopted as per UGC guide lines.

Suggested manuals:

Kindt, T. J., Goldsby, R.A., Osborne, B. A. and Kuby, J (2006). Immunology, VI Edition. W.H. Freeman and Company.
David, M., Jonathan, B., David, R. B. and Ivan R. (2006). Immunology, VII Edition, Mosby, Elsevier Publication.
Abbas, K. Abul and Lichtman H. Andrew (2003.) Cellular and Molecular Immunology, V Edition. Saunders Publication.


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19-20-20

KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS 2019 - 2022)
B.Sc. ZOOLOGY III Year
SEMESTER – V

IMMUNOLOGY AND ANIMAL BIOTECHNOLOGY

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

UNIT – I

1.1 Basics of Immune system

- 1.1.1 Cells of the Immune system and the Lymphoid organs (Primary and Secondary)
- 1.1.2 First line of defences-physical and chemical barriers; second line of defences – inflammation and phagocytosis.
- 1.1.3 Types of Immunity- **Inherent (Active and Passive)** and Acquired Immunity (Active and Passive) Humoral and Cell mediated immunity.
- 1.1.4 Major Histocompatibility complex (MHC)- structure and function of class I and Class II proteins. Significance of MHC in organ transplantation; MHC restriction

UNIT – II

2.1 Antibodies and Antigens and Immune system diseases

- 2.1.1 Antibodies(Immunoglobulins) – Structure, functions and classification, antibody diversity, Monoclonal antibodies and applications
- 2.1.2 Antigens structure, antigenic determinants/epitopes, haptens, adjuvants and antigenicity.
- 2.1.3 Antigen-antibody reactions; Agglutination; Precipitation, Opsonization, Cytotoxicity
- 2.1.4 **Hypersensitivity reactions.**
Autoimmunity and Immunodeficiency diseases.

Unit – III

3.1 Animal Biotechnology and Genetically modified organisms

- 3.1.1 Concept and Scope of Animal Biotechnology
- 3.1.2 Recombinant DNA Technology and its applications.
- 3.1.3 Cloning Vectors- Plasmids, Cosmids and shuttle vectors, Cloning methods(Cell, Animal and Gene cloning); Restriction enzymes and Ligases
- 3.1.4 Transgenesis – Methods of Transgenesis
Production of Transgenic animals- Sheep and Fish

Unit – IV

4.1 Applications of Biotechnology

- 4.1.1 In vitro fertilization and embryo transfer
- 4.1.2 Hybridoma technology – concepts and applications
- 4.1.3 Stem cells- Types and their applications
- 4.1.4 Recombinant insulin and human growth hormone; Polymerase Chain Reaction (PCR)
Animal Bioreactors- Concepts and Applications.

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Department Of Zoology,
University College
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WAGHARHALLI

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Chairperson
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KAKATIYA UNIVERSITY - WGL-506009 (T.S.)

19-20 (3)

KAKATIYA UNIVERSITY
Under Graduate Courses (Under CBCS 2019 - 2022)
B.Sc. ZOOLOGY II Year
SEMESTER - III

ANIMAL PHYSIOLOGY AND ANIMAL BEHAVIOUR

Theory: 80 Marks, Practical: 20 Marks, Total Marks: 100
Internal Marks: 20
External Marks: 80

UNIT – I

1.1 Digestion

- 1.1.1 **Enzymes:** Definition, Classification, Inhibition, Regulation
- 1.1.2 **Digestion of Carbohydrates, Proteins, Lipids and Cellulose**
- 1.1.3 Absorption and Assimilation of digested food
- 1.1.4 **Role of Gastrointestinal hormones in digestion**

1.2 Excretion, Homeostasis and Osmoregulation

- 1.2.1 Classification of Animals on the basis of excretory products: Ammonotelic, Ureotelic, and Uricotelic; Structure and function of Nephron
- 1.2.2 Urine formation and Counter current mechanism
- 1.2.3 Concept and Mechanism of Homeostasis
 - a) Hormone regulation of Blood Glucose levels in Human being
 - b) Water and Ionic Regulation by Marine and Fresh water Animals
 - c) Thermo regulation in Human being
- 1.2.4 Osmoregulation in Marine, Fresh and Brackish water Animals

UNIT – II

2.1 Respiration

- 2.1.1 Definition of Respiration, Respiration mechanism, External, Internal and Cellular Respiration.
- 2.1.2 Respiratory Pigments; Transport of Oxygen, Oxygen dissociation curves, and Bohr's Effect;
- 2.1.3 Transport of Carbon dioxide, Chloride shift
- 2.1.4 Regulation of Respiration; Nervous and Chemical Mechanism

2.2 Circulation

- 2.2.1 Types of Circulation Open and Closed; Structure of Mammalian Heart
- 2.2.2 Types of Hearts: Myogenic and Neurogenic
- 2.2.3 Heart functions - Conduction and Regulation of Heart beat, Regulation of Heart rate; ECG
- 2.2.4 Tachycardia and Bradycardia: Blood Clotting mechanism

UNIT – III

3.1 Muscle Contraction

- 3.1.1 Types of Muscles
- 3.1.2 Ultra structure of skeletal muscle fibre
- 3.1.3 Mechanism and Chemical changes during Muscle Contraction (Sliding filament theory)
- 3.1.4 Twitch Tetanus summation and Treppe fatigue

20
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Elective Paper – VIII

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Max. Marks: 60

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2017-18 # Year.

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2019-20

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