

TELANGANA STATE BOARD OF INTERMEDIATE EDUCATION, HYDERABAD

ACADEMIC YEAR 2020-2021

70% CONTENT IN VIEW OF COVID-19 PANDEMIC

INTERMEDIATE 2nd YEAR BOTANY PRACTICAL SYLLABUS

Part-I (To be performed by students)

1. Separation of chlorophyll pigments by paper chromatography.
2. Preparation of temporary mount of dicot and monocot root and stem.

Part II (To be demonstrated by teacher)

3. Study of the distribution of stomata in the upper and lower surface of leaf.
4. Study of aerobic respiration
5. Observe and comment on the following
 - A. Anaerobic respiration
 - B. Phototropism
 - C. Apical bud removal

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INTERMEDIATE 2nd YEAR BOTANY Syllabus.

UNIT - 1: PLANT PHYSIOLOGY

CHAPTER 3: ENZYMES.

- 3.1 Chemical Reactions.
- 3.2 Enzymatic conversions.
- 3.3 Nature of Enzyme action.
- 3.4 Factors affecting enzyme activity.
- 3.5 Classification and nomenclature of enzymes.
- 3.6 Cofactors.

CHAPTER 4 PHOTOSYNTHESIS IN HIGHER PLANTS.

- 4.1 What do we know?
- 4.2 Early Experiments.
- 4.3 What is the site of Photosynthesis?
- 4.4 How many pigments are involved in Photosynthesis?
- 4.5 What is Light Reaction?
- 4.6 The Electron transport
- 4.7. Where are the ATP and NADPH are used?
- 4.8 The C₄ Path way.
- 4.9 Photo Respiration
- 4.10 Factors affecting Photosynthesis

CHAPTER 5: RESPIRATION IN PLANTS

- 5.1 Do plants Breathe?
- 5.2 Glycolysis
- 5.3 Fermentation.
- 5.4 Aerobic Respiration.
- 5.5 The Respiratory Balance sheet.
- 5.6 Amphibolic Pathway.
- 5.7 Respiratory Quotient

CHAPTER 6: PLANT GROWTH AND DEVELOPMENT

- 6.4 Plant Growth regulators.

UNIT 3: Genetics

Chapter 9: --Principles of Inheritance and Variations

- 9.1 Mendel's Experiments.
- 9.2 Inheritance of one gene (monohybrid cross)
- 9.3 Deviations from Mendelian concept of dominance.
- 9.4 Inheritance of Two genes (Dihybrid cross)
- 9.5 Chromosomal Theory of Inheritance
- 9.6 Linkage and recombination.
- 9.7 Mutations

UNIT 4 MOLECULAR BIOLOGY

CHAPTER 10: Molecular Basis of Inheritance.

- 10.1 The DNA
- 10.2 The search for Genetic Material.
- 10.3 RNA world
- 10.4 Replication
- 10.5 Transcription.
- 10.6 Genetic code
- 10.7 Translation.
- 10.8 Regulation of Gene Expression

UNIT- 5 BIOTECHNOLOGY

CHAPTER 11: BIO-TECHNOLOGY; PRINCIPLES AND PROCESSES

- 11.1 Principles of Biotechnology.
- 11.2 Tools of Recombinant DNA Technology
- 11.3 Process of Recombinant DNA Technology.

Chapter 12 Biotechnology and its Applications

- 12.1 Biotechnological applications in agriculture
- 12.2 Other applications of biotechnology
- 12.3 Transgenic plants
- 12.4 Bio-safety and ethical issues.

UNIT 6: PLANTS, MICROBES AND HUMAN WELFARE

CHAPTER 14: MICROBES IN HUMAN WELFARE

- 14.1 Microbes in Household products.
- 14.2 Microbes in Industrial products.
- 14.3 Microbes in Sewage treatment.
- 14.4 Microbes in production of Biogas.
- 14.5 Microbes as Bio control agents.
- 14.6 Microbes as Bio- fertilizers.
- 14.7 Challenges posed by Microbes.

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INTERMEDIATE CHEMISTRY PRACTICALS SYLLABUS

I. Qualitative analysis

Determination of one cation and one anion in a given salt.

Cation : Pb^{2+} , Cu^{2+} , Al^{3+} , Fe^{2+} , Mn^{2+} , Zn^{2+} , Ni^{2+} , Ca^{2+} , Sr^{2+} , Ba^{2+} , Mg^{2+} , NH_4^+ Anions: $(CO_3)^{2-}$, $(SO_4)^{2-}$, Cl^- , Br^- , CH_3COO^- , NO_3^- - (Note: Insoluble salts excluded)

II. Volumetric analysis (Titrimetry)

II.a. Determination of concentration/ molarity of $KMnO_4$ solution by titrating it against a standard Ferrous Ammonium Sulphate solution

II.b. Determination of concentration/ molarity of $KMnO_4$ solution by titrating it against a standard Oxalic acid solution

II.c. Determination of concentration/ molarity of HCl solution by titrating it against a standard Sodium Carbonate solution

II.d. Determination of concentration/ molarity of $NaOH$ solution by titrating it against a standard Oxalic acid solution

III.a. Tests for the functional groups present in organic compounds:

Unsaturation, alcoholic, phenolic, aldehydic, ketonic, carboxylic and amino (Primary) groups.

III.d Characteristic tests of carbohydrates, and proteins in pure samples and their detection in given food stuffs.

PROJECT

Scientific investigations involving laboratory testing and collecting information from other sources

A few suggested Projects.

- Study of the presence of oxalate ions in guava fruit at different stages of ripening.
- Study of quantity of casein present in different samples of milk.
- Preparation of soybean milk and its comparison with the natural milk with respect to curd formation, effect of temperature, etc.
- Study of the effect of Potassium Bisulphate as food preservative under various conditions (temperature, concentration, time, etc.)
- Study of digestion of starch by salivary amylase and effect of pH and temperature on it.
- Comparative study of the rate of fermentation of following materials: wheat flour, gram flour, potato juice, carrot juice, etc.
- Extraction of essential oils present in Saunf (aniseed), Ajwain (carum), Illaichi (cardamom).
- Study of common food adulterants in fat, oil, butter, sugar, turmeric powder, chilli powder and pepper.

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INTERMEDIATE 2nd YEAR CHEMISTRY SYLLABUS

| | |
|--|---|
| Chapter 1 SOLID STATE | 1.1 General characteristics of solids. 1.2 Amorphous and crystalline solids. 1.3 Classification of crystalline solids 1.4 Probing the structure of solids: X-ray Crystallography 1.5 Crystal lattices and unit cells 1.6 Number of atoms in a Unit cell 1.7 Close packed structures 1.8 Packing efficiency 1.9 Calculations involving unit cell dimensions 1.10 Imperfections in solids. |
| Chapter 2 SOLUTIONS | 2.1 Types of solutions 2.2 Expressing concentration of solutions 2.3 Solubility 2.4 Vapour pressure of liquid solutions 2.5 Ideal and non-ideal solutions 2.6 Colligative properties and determination of molar mass. |
| Chapter 3 ELECTROCHEMISTRY AND CHEMICAL KINETICS ELECTROCHEMISTRY | 3.3 Nernst equation 3.4 Conductance of electrolytic solutions applications of Kohlrausch's law chemical kinetics: 3.5 Electrolysis 3.9 Rate of a chemical reaction 3.10 Factors influencing rate of a reaction 3.11 Integrated rate equations 3.12 Pseudo first order reaction 3.13 Temperature dependence of the rate of a reaction. |
| Chapter 4 SURFACE CHEMISTRY | 4.1 Adsorption and absorption 4.3 Colloids 4.4 Classification of colloids 4.6 Colloids Around us- application of colloids. |
| Chapter 5 GENERAL PRINCIPLES OF METALLURGY | Entire Chapter Deleted |
| Chapter 6 p-BLOCK ELEMENTS GROUP-15 ELEMENTS | 6.1 Introduction-Occurance 6.2 Dinitrogen 6.3 Compounds of nitrogen-preparation and properties of ammonia 6.4 Oxides of nitrogen 6.5 Preparation and properties of nitric acid 6.6 Phosphorous-allotropic forms GROUP-16 ELEMENTS 6.10 Introduction-Occurance 6.11 Dioxygen-preparation, properties and uses 6.12 Simple oxides 6.13 Ozone-preparation, properties, structure, uses 6.14 Sulphur-allotropic forms 6.15 Sulphur dioxide-preparation, properties, uses 6.16 Oxoacids of sulphur, 6.17 sulphuric acid properties and uses GROUP-17 ELEMENTS 6.18 Occurance-Introduction 6.19 Chlorine-preparation, |

| | |
|--|---|
| | properties and uses 6.20 Hydrogen chloride: preparation, properties, uses 6.21 Oxoacids of halogens 6.22 Interhalogen compounds GROUP-18 ELEMENTS 6.23 Introduction-Occurance, electronic configuration, ionization enthalpy, atomic radii electron gain enthalpy, physical and chemical properties. |
| Chapter 7 d AND f BLOCK ELEMENTS & COORDINATION COMPOUNDS | 7.1 Position in the periodic table 7.2 Electronic configuration of the d-block elements 7.3 General properties of the transition elements 7.8 Werner's theory of coordination compounds 7.9 Definitions of some terms used in coordination compounds 7.10 Nomenclature of coordination compounds 7.11 Isomerism in coordination compounds 7.12 Bonding in coordination compounds 7.13 Bonding in metal carbonyls 7.14 Stability of coordination compounds 7.15 Importance and applications of coordination compounds. |
| Chapter 8 POLYMERS | Entire Chapter Deleted |
| Chapter 9 BIOMOLECULES | 9.1 Carbohydrates: Classification of carbohydrates, mono saccharides 9.2 Amino acids and Proteins. 9.5 Nucleic acids |
| Chapter 10 CHEMISTRY IN EVERYDAY LIFE | Entire Chapter Deleted |
| Chapter 11 HALO ALKANES AND HALO ARENES | 11.1 Classification and nomenclature 11.2 Nature of C-X bond 11.3 Methods of preparation : alkyl and aryl halides 11.4 Physical properties of alkyl and arylhalides 11.5 Chemical reactions of alkyl and aryl halides. |
| Chapter 12 ORGANIC COMPOUNDS CONTAINING C,H AND O | (Alcohols, Phenols, Ethers, Aldehydes, Ketones and Carboxylic acids)Alcohols, Phenols and Ethers 12.1 Alcohols, phenols and ethers- classification 12.2 Nomenclature of alcohols, phenols and ethers 12.3 Structures of hydroxyl ,ether functional groups 12.4 Methods of preparation of alcohols, phenols 12.5 Physical properties of alcohols and phenols 12.6 Chemical reactions of alcohols and phenol 12.8 Ethers-Methods of preparation, physical properties and Chemical reactions Aldehydes and Ketones 12.9 Nomenclature and structure of carbonyl group 12.10Preparation of aldehydes and ketones 12.11Physical properties of aldehydes and ketones 12.12 Chemical reactions of aldehydes and ketones 12.13 Uses of aldehydes and ketones Carboxylic Acids 12.14 Nomenclature and structure of carboxyl group 12.15 Methods of preparation of carboxylic acids 12.16 Physical properties of carboxylic acids 12.17 Chemical reactions of carboxylic acids 12.18 Uses of carboxylic acids. |
| Chapter 13 | Amines 13.1 Structure of amines 13.2 Classification 13.3 |

**ORGANIC
COMPOUNDS
CONTAINING
NITROGEN**

Nomenclature 13.4 Preparation of amines 13.5 Physical properties of amines 13.6 Chemical reactions of amines.

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INTERMEDIATE 2nd YEAR MATHEMATICS (IIA) SYLLABUS

| S.NO | CHAPTERS | TOPICS |
|------|--|---|
| 1 | Complex Numbers | Introduction 1.1: Complex number as an Ordered pair of real numbers Fundamental operations 1.2: Representation of Complex number in the form $a+ib$ |
| 2 | De Moivre's Theorem | Upto exercise 2(b) section-I and related examples |
| 3 | Quadratic Expressions | Introduction 3.1 Quadratic expressions, equations in one variable 3.2 Sign of quadratic expressions, change of signs and maximum, minimum values |
| 4 | Theory of Equations | Complete Chapter |
| 5 | Permutations and Combinations | Introduction 5.1 Fundamental Principles of Counting - Linear and Circular permutations 5.2: Permutation of n dissimilar things r at a time 5.6: Combinations Exercise 5(e) Section I and II Related Problems Exercise 5(e) Section III Deleted |
| 6 | Binomial Theorem | Introduction Exercise 6(a) Section I and Section II up to 4th problem and related examples Exercise 6(b) Section I and related examples Exercise 6(c) Deleted |
| 7 | Partial Fractions | Upto 7(c) exercise |
| 8 | Measures of Dispersion | Introduction 8.1: Range 8.2.1: Mean Deviation for ungrouped data Exercise 8(a) Section I (problems 1 and 2) |
| 9 | Probability | Introduction 9.1 Random experiments and events 9.2 Classical definition of probability, axiomatic approach and addition theorem on probability 9.3.1 Independent and dependent events, conditional probability, multiplication theorem and problems and related examples |
| 10 | Random Variables and Probability Distribution | Introduction 10.1 Random Variables 10.2 Theoretical Discrete Distributions- Binomial and Poisson Distributions |

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INTERMEDIATE 2nd YEAR MATHEMATICS (IIB) SYLLABUS

| S.NO | CHAPTERS | TOPICS |
|-------------|-------------------------------|---|
| 1 | Circles | Introduction 1.1: Equation of a circle, standard form, centre and radius 1.2 Position of a point the plane of a circle – Definition of a tangent 1.3 Position of a straight line in the plane of a circle condition for a line to be tangent 1.4. Chord of contact and polar 1.5 Relative Positions of two circles |
| 2 | System of Circles | Introduction 2.1: Angle between two intersecting circles 2.2: Radical axis of two circles |
| 3 | Parabola | Introduction 3.1: Conic Sections, Standard forms and related problems |
| 4 | Ellipse | Introduction 4.1: Equation of Ellipse in standard form, Parametric equation |
| 5 | Hyperbola | Introduction 5.1: Equation of hyperbola in standard form – Parametric equations Exercise 5(a) Up to Section I and related examples |
| 6 | Integration | Introduction 6.1: Integration as the inverse process of differentiation, standard forms and properties of integrals 6.2: Method of substitution (6.2.1 to 6.2.19) and related problems |
| 7 | Definite Integrals | Introduction Exercise 7(a) Exercise 7(b) section I and III (section II Deleted) |
| 8 | Differential equations | Introduction 8.1: Formation of differential equation – Degree and order of an ordinary differential equation 8.2: Solving of differential equations 8.2(a): Variable separable method |

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INTERMEDIATE 2nd YEAR PHYSICS SYLLABUS

CHAPTER – 1: WAVES

- 1.1 Introduction
- 1.2 Transverse and Longitudinal waves
- 1.3 Displacement relation in a progressive wave
- 1.4 Speed of a Travelling Wave
- 1.5 The principle of superposition of waves,
- 1.6 Reflection of waves
- 1.7 Beats

CHAPTER– 2: RAY OPTICS AND OPTICAL INSTRUMENTS

- 2.1 Introduction
- 2.3 Refraction
- 2.4 Total Internal Reflection
- 2.5 Refraction at Spherical Surfaces and by Lenses.
- 2.6 Refraction through a prism
- 2.7 Dispersion by a Prism
- 2.8 Some Natural phenomena due to Sunlight (except 2.8.2)
- 2.8.1 The Rainbow
- 2.9 Optical Instruments

CHAPTER – 3: WAVE OPTICS

- 3.1 Introduction
- 3.2 Huygens Principle
- 3.3 Refraction and Reflection of plane waves using Huygens Principle
- 3.4 Coherent and Incoherent Addition of waves
- 3.5 Interference of Light waves and Young's Experiment
- 3.6 Diffraction (except 3.6.3)
- 3.6.1 The single slit
- 3.6.2 Seeing the single slit diffraction pattern
- 3.6.4 The validity of ray optics

CHAPTER – 4: ELECTRIC CHARGES AND FIELDS

- 4.1 Introduction
- 4.2 Electric Charges
- 4.3 Conductors and Insulators
- 4.4 Charging by Induction
- 4.5 Basic Properties of Electric Charge
- 4.6 Coulomb's Law
- 4.7 Forces between Multiple charges
- 4.8 Electric Field
- 4.9 Electric Field Lines
- 4.10 Electric Flux
- 4.11 Electric Dipole
- 4.12 Dipole in a uniform external field
- 4.13 Continuous Charge Distribution
- 4.14 Gauss's Law
- 4.15 Application of Gauss' Law (except 4.15.3)
 - 4.15.1 Field due to an infinitely long straight uniformly charged wire
 - 4.15.2 Field due to a uniformly charged infinite plane sheet

CHAPTER–5: ELECTROSTATIC POTENTIAL AND CAPACITANCE

- 5.1 Introduction
- 5.2 Electrostatic Potential
- 5.3 Potential due to a point charge
- 5.4 Potential due to an Electric Dipole
- 5.5 Potential due to a System of Charges
- 5.6 Equipotential Surfaces
- 5.7 Potential Energy of a System of Charges
- 5.8 Potential Energy in an External field
- 5.9 Electrostatics of Conductors
- 5.10 Dielectrics and Polarisation
- 5.11 Capacitors and Capacitance
- 5.12 The Parallel Plate Capacitor
- 5.13 Effect of Dielectric on Capacitance
- 5.14 Combination of Capacitors
- 5.15 Energy Stored in a Capacitor

CHAPTER – 6: CURRENT ELECTRICITY

- 6.1 Introduction
- 6.2 Electric current
- 6.3 Electric current in conductors
- 6.4 Ohm's Law
- 6.5 Drift Electrons and Origin of Resistivity
- 6.6 Limitations of Ohm's Law

- 6.8 Temperature Dependence of Resistivity
- 6.9 Electric Energy, Power
- 6.11 Cells, emf, Internal Resistance
- 6.12 Cells in Series and in Parallel
- 6.13 Kirchoff's Laws
- 6.14 Wheatstone Bridge(**Qualitative treatment only**)
- 6.15 Meter Bridge
- 6.16 Potentiometer

CHAPTER – 7: MOVING CHARGES AND MAGNETISM

- 7.1 Introduction
- 7.2 Magnetic Force
- 7.3 Motion in a Magnetic field
- 7.5 Magnetic Field due to a Current Element, Biot-Savart Law
- 7.6 Magnetic Field on the Axis of a Circular Current Loop
- 7.7 Ampere's Circuital Law
- 7.8 The Solenoid and the Toroid
- 7.9 Force between two Parallel Currents, The Ampere(Unit)
- 7.10 Torque on Current Loop, Magnetic Dipole
- 7.11 The Moving Coil Galvanometer

CHAPTER – 8: MAGNETISM AND MATTER

- 8.1 Introduction
- 8.2 The Bar Magnet (**except 8.2.2, 8.2.3**)
 - 8.2.1 The magnetic field lines
 - 8.2.4 The electrostatic analog
- 8.3 Magnetism and Gauss' Law
- 8.4 The Earth's Magnetism
- 8.5 Magnetisation and Magnetic Intensity

CHAPTER – 9: ELECTROMAGNETIC INDUCTION

- 9.1 Introduction
- 9.2 The experiments of Faraday and Henry
- 9.3 Magnetic Flux
- 9.4 Faraday's Law of Induction
- 9.5 Lenz's Law and Conservation of Energy
- 9.6 Motional Electromotive Force
- 9.7 Energy consideration : A Quantitative Study
- 9.8 Eddy Currents
- 9.9 Inductance
- 9.10 AC Generator

CHAPTER – 10: ALTERNATING CURRENT :

- 10.1 Introduction
- 10.2 AC voltage applied to a Resistor
- 10.3 Representation of AC Current and Voltage by Rotating Vectors- Phasors
- 10.4 AC voltage applied to an Inductor
- 10.5 AC voltage applied to a Capacitor
- 10.6 AC voltage applied to a Series LCR Circuit
- 10.8 LC Oscillations(**Qualitative treatment only**)
- 10.9 Transformers

CHAPTER – 11: ELECTRO MAGNETIC WAVES

- 11.1 Introduction
- 11.3 Electro Magnetic Waves (**qualitative treatment only**)
- 11.4 Electromagnetic Spectrum

CHAPTER–12: DUAL NATURE OF RADIATION AND MATTER

- 12.1 Introduction
- 12.2 Electron Emission
- 12.3 Photoelectric Effect
- 12.4 Experimental Study of Photoelectric Effect
- 12.5 Photoelectric Effect and Wave Theory of Light
- 12.6 Einstein's Photoelectric Equation: Energy Quantum of Radiation
- 12.7 Particle Nature of Light : The Photon
- 12.8 Wave Nature of Matter

CHAPTER–13: ATOMS

- 13.1 Introduction
- 13.2 Alpha-particle Scattering and Rutherford's Nuclear model of Atom
- 13.3 Atomic Spectra
- 13.4 Bohr Model of the Hydrogen Atom
- 13.5 The Line Spectra of the Hydrogen Atom
- 13.6 De Broglie's Explanation of Bohr's Second Postulate of Quantization

CHAPTER–14: NUCLEI

- 14.1 Introduction
- 14.2 Atomic Masses and Composition of Nucleus
- 14.3 Size of the Nucleus
- 14.4 Mass Energy and Nuclear Binding Energy (except 14.4.2)
 - 14.4.1 Mass- Energy
- 14.5 Nuclear Force
- 14.7 Nuclear energy

CHAPTER–15:

SEMICONDUCTOR ELECTRONICS: MATERIALS, DEVICES AND SIMPLE CIRCUITS

- 15.1 Introduction
- 15.2 Classification of Metals, Conductors and Semiconductors (**qualitative ideas only**)
- 15.3 Intrinsic Semiconductor
- 15.4 Extrinsic Semiconductor
- 15.5 p – n junction
- 15.6 Semi conductor diode
- 15.7 Application of Junction Diode as a Rectifier
- 15.8 Special Purpose p-n Junction Diodes (except 15.8.1)
 - 15.8.2 Optoelectronic junction devices
- 15.9 Junction Transistor (except 15.9.3, 15.9.4, 15.9.5)
 - 15.9.1 Transistor structure and action
 - 15.9.2 Basic transistor circuit configuration and transistor characteristics
- 15.10 Digital Electronics and Logic Gates
- 15.11 Integrated Circuits

CHAPTER– 16: COMMUNICATION SYSTEMS

- 16.1 Introduction
- 16.2 Elements of communication system
- 16.3 Basic Terminology used in Electronic Communication Systems
- 16.4 Bandwidth of Signals
- 16.5 Bandwidth of Transmission Medium
- 16.6 Propagation of Electromagnetic Waves
- 16.7 Modulation and its Necessity
- 16.8 Amplitude Modulation
- 16.9 Production of Amplitude Modulated Wave
- 16.10 Detection of Amplitude Modulated Wave

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1. Velocity of sound by Resonance apparatus
2. Determination of focal length of a Convex lens
3. Refractive index of prism material (i-d curve)
4. Meter Bridge
5. Magnetic lines of force
6. Ohm's law
7. P-N Junction diode

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INTERMEDIATE 2nd YEAR ZOOLOGY SYLLABUS

UNIT-I Human Anatomy and Physiology-I

UNIT I (A) – (DELETED 2020-2021)

Unit I B: Breathing and Respiration

Respiratory organs in animals; Respiratory system in humans; Mechanism of breathing and its regulation in humans - Exchange of gases, transport of gases and regulation of respiration; Respiratory volumes; Respiratory disorders: Asthma, Emphysema, Occupational respiratory disorders - Asbestosis, Silicosis, Siderosis, Black Lung Disease in coalminers.

UNIT II : Human Anatomy and Physiology-II

Unit II A: Body Fluids and Circulation

Covered in I year composition of lymph and functions; Clotting of blood; Human circulatory system - structure of human heart and blood vessels; Cardiac cycle, cardiac output, double circulation; regulation of cardiac activity; Disorders of circulatory system: Hypertension, coronary artery disease, angina pectoris, heartfailure.

Unit II B: Excretory products and their elimination

Modes of excretion - Ammonotelism, Ureotelism, Uricotelism; Human excretory system - structure of kidney and nephron; Urine formation, osmoregulation; Regulation of kidney function -Renin-Angiotensin - Aldosterone system, Atrial Natriuretic Factor, ADH and diabetes insipidus; Role of other organs in excretion; Disorders: Uraemia, renal failure, renal calculi, nephritis, dialysis using artificial kidney.

UNITIII:HumanAnatomyandPhysiology-III

Unit IIIA: Muscular and Skeletalsystem

Types of movement, the muscle, mechanism of muscle contraction, muscle fatigue, cori cycle, types of muscle fibres.

Unit III B: Neural control and co-ordination

Nervous system in human beings - Central nervous system, Peripheral nervous system and Visceral nervous system; Generation and conduction of nerve impulse.

UNIT IV: Human Anatomy and Physiology-IV

Unit IVA: Endocrine system and chemical co-ordination

Endocrine glands and hormones; Human endocrine system-Hypothalamus, Pituitary, Pineal, Thyroid, Parathyroid, Adrenal, Pancreas, Gonads; Mechanism of hormone action (Elementary idea only); Role of hormones as messengers and regulators; Hypo and Hyper activity and related disorders: Common disorders -Dwarfism, acromegaly, cretinism, goiter, exophthalmic goiter, diabetes, Addison's disease, Cushing's syndrome. (Diseases & disorders to be dealt in brief).

Unit IVB: Immune system

Basic concepts of Immunology - Types of Immunity - Innate Immunity, Acquired Immunity, Active and Passive Immunity, Cell mediated Immunity and Humoral Immunity, Interferon, HIV and AIDS.

UNIT V: Human Reproduction

Unit VA: Human Reproductive System

Male and female reproductive systems; Microscopic anatomy of testis & ovary; Gametogenesis " Spermatogenesis & Oogenesis; Menstrual cycle; Fertilization, Embryo development up to blastocyst formation, Implantation; Pregnancy, placenta formation, Parturition, Lactation (*elementary idea*).

Unit VB: Reproductive Health

Need for reproductive health and prevention of sexually transmitted diseases (STD); Birth control - Need and methods, contraception and medical termination of pregnancy (MTP); Amniocentesis; infertility and assisted reproductive technologies - IVF-ET, ZIFT, GIFT (*elementary idea for general awareness*).

UNIT VI: Genetics

Heredity and variation: Mendel's laws of inheritance with reference to *Drosophila melanogaster* Grey, Black body colour; Long, Vestigial wings), Pleiotropy; Multiple alleles: Inheritance of blood groups and Rh-factor; Co-dominance (Blood groups as example); Elementary idea of polygenic inheritance; Skin colour in humans (refer Sinnott, Dunn and Dobzhansky); Sex determination - in humans, birds, *Fumea* moth, genic balance theory of sex determination in *Drosophila melanogaster* and honey bees; Sex linked inheritance - Haemophilia, Colour blindness; Mendelian disorders in humans: Thalassaemia, Haemophilia, Sickle celled anaemia, cystic fibrosis PKU, Alkaptonuria; Chromosomal disorders -Down's syndrome, Turner's syndrome and Klinefelter syndrome; Genome, Human Genome Project and DNA Fingerprinting,

UNIT VII: (DELETED (2020-2021))

UNIT VIII: Applied Biology

Apiculture; Animal Husbandry: Pisciculture, Poultry management, Dairy management; Animal breeding; Application of Biotechnology in health: Human insulin and vaccine production ; Gene Therapy; Transgenic animals; Vaccines, MABs, Cancer biology, stem cells.

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INTERMEDIATE 2nd YEAR ZOOLOGY PRACTICAL SYLLABUS

A. VERTEBRATE SLIDES OF MAMMAL

1. L.S. of kidney
2. T.S. of testis
3. T.S. of ovary

B. VERTEBRATE SPECIMENS

1. Shark
2. Rohu
3. Catla
4. Labeo
5. Frog
6. Sea snake
7. Naja naja
8. Viper
9. Pigeon
10. Rabbit

C. PHYSIOLOGY EXPERIMENTS

1. Demonstration of digestion of starch by salivary amylase.
2. Identification of presence of glucose in the given samples.
3. Identification of presence of albumin in the given samples.

D. DISSECTIONS AS MODELS THROUGH UNLABELLED MODELS OR CHARTS

(Human)

1. Arterial system
2. Venous system
3. Urinogenital system
