

BIOLOGY SYLLABUS

For

MEDICAL (NEET)

Videos | Books | Assignments | Doubt Clearing | Study Planner



Neet Biology Syllabus 2021(Botany) Unit - Diversity in Living World

The Living World

Biology, Characteristics Of Living Organism, Growth, Reproduction, Cellular Organization, Metabolism, Consciousness, Diversity In Living World, Nomenclature, Binomial Nomenclature, Rules Of Nomenclature, Significance Of Scientific Nomenclature, Classification, Taxonomy, Types Of Taxonomy, Chemotaxonomy, Cytotaxonomy, Karyotaxonomy, Significance Of Taxonomy, Systematics, Taxonomic Categories, Species, Genus, Family, Order, Class, Phylum / Division, Kingdom, Species Concept, Biological Concept, Taxonomical Aids, Herbarium, Steps Of Herbarium Technique, Key For Plant Identification, Flora, Manuals, Monographs And Catalogues.

Biological Classification

Kingdom System, Three Kingdom Classification, Four Kingdom Classification, Five Kingdom Classification, Six Kingdom/Three Domain, Kingdom - Monera, Main Characteristic Of Monerans, Nutrition In Bacteria, Autotrophs, Photosynthetic Autotrophs (Photoautotrophs), Chemosynthetic Autotrophs (Chemoautotrophs), Heterotrophs, Saprotrophic, Parasitic, Symbiotic, Respiration, Aerobic Bacteria, Obligate Aerobic, Facultative Anaerobic, Anaerobic Bacteria, Obligate Anaerobic, Facultative Aerobic, Reproduction Asexual Reproduction, Genetic Recombination, Asexual Reproduction Binary Fission, Endospore, Structure Of Endospore, Genetic Recombination/Sexual Recombination, Transformation (Griffith - 1928), Griffith's Experiment, Conjugation: Lederberg And Tatum (1946), Conjugation Between F⁺ And F⁻, Conjugation Between Hfr (Male) And F⁻ (Female), Transduction, Harmful Activities, Denitrification - Denitrifying Bacteria, Food Poisoning, Water Pollution, Biological Weapons, Beneficial Activities, Antibiotics, Industries, Production Of Vitamins, Archaeobacteria, Cell Wall, Cell Membrane, Methanogens, Halophiles, Thermo Acidophiles, Cyanobacteria [Blue Green Algae], Structural Organization, Reproduction, Economic Importance Of Bga, Spirulina (Single Cell Protein Scp), Nitrogen Fixation, Harmful Activities, Mycoplasma, Mycoplasma Structure, Reproduction In Mycoplasma, Symptoms Of Plant Diseases, Culture Of Mycoplasma, Kingdom - Protista, Nutrition, Absorptive, Reproduction, Sexual Reproduction, Anisogamy, Oogamy, Biological Classification Dinoflagellates, Noctiluca: It Is An Exception In Dinoflagellates Because, Reproduction, Special Features Of Dinoflagellates, Diatoms, Structure, Reproduction, Use Of Diatoms, Euglenoids, Structure, Stored Food- Paramylum And Fat, Reproduction, Slime Moulds, Structure, Reproduction, Kingdom- Mycota, Structure, Reproduction, Asexual Reproduction, Types Of Spores, Sexual Reproduction, Methods Of Sexual Reproduction, Gametangial Contact, Gametangial Copulation, Somatogamy, Spermatization, Different Forms Of Mycelium, True Fungi, Phycomycetes, Oomycetes, Zygomycetes (Conjugation Fungi), Ascomycetes, Types Of Fruiting Bodies, Aspergillus, Yeast, Special Type Of production, Economic Importance, Basidiomycetes: „Club Fungi“, Sexual Reproduction, Spermatization, Puccinia, Stage Of Life Cycle On Wheat (Primary Host), Telia And Teliospores, Basidia And Basidiospores, Stage Of Life Cycle On Strawberry (Ultimate Host), Bracket Or Shelf Fungi, Puff Balls, Mushrooms, Agaricus, Deuteromycetes, Mycelium, Sexual Reproduction, History

Of Virus, Characteristic Features Of Viruses, Non-Living Characters Of Viruses, Living Characters Of Viruses, Morphology And Structure Of Viruses, Shape, Structure Of Bacteriophages, Function Of Tail Fibers, Life Cycle Of Bacteriophage, Viroids, Prion Or Slow Viruses, Plant Diseases Caused By Viruses, Character Of Viral Diseases In Plant, Important Point,

Plant Kingdom

Plant Kingdom, The Systems Of Classification, Natural System Of Classification, Drawbacks, Phylogenetic/Cladistic System Of Classification, Ostwald Tippo, Algae, Chlorophyceae, Phaeophyceae, Rhodophyceae, Economic Importance, Bryophyta, General Characters, Teridophytes

Unit - Structural Organisation in Plants

Morphology of Flowering Plants

General Introduction Root, Stem, Leaf, Introduction, Classification Of Plants, Root, Types Of Roots, Root System, Region Of Roots, Function Of Root, Stem, Forms Of System, Types & Modification Of System, Leaf (Phyllopodium), Venation Of Lamina, Type Of Leaf, Modification Of Leaves, Inflorescence, Cymos, Special Type Of Inflorescence, Flower, Some Words Related To Flower, Insertion Of Floral Leaves, Calyx, Duration Of Sepals, Corolla, Gamopetalous, Zygomorphic Polypetalous Corolla, Zygomorphic Gamopetalous Corolla, Aestivation, Perianth, Androecium, Gynoecium (Pistil), Cohesion Of Carpel, Placentation, Fruit, Classification Of Fruit, Aggregate Fruit, Composite Fruit, Dispersal Of Fruits And Seed, Wind (Anemochory), Water (Hydrochory), Animal (Zoochory), Plant, Morphology, Function Of Root, General Characters, Regions Of Roots, Modification Of Root, Fusiform Roots, Conical Roots, Napiform, Tuberous Root, Nodulated Root, Respiratory Roots, Modification Of Adventitious Roots, Tuberculated Root, Fasciculated, Nodulose, Annulated, Prop Root Or Pillar Roots, Butteress Root, Foliar Roots Or Epiphyllous Roots, Climbing Roots, Stem, Forms Of Stem, Types & Modification Of Stem, Tendril Climbers, Twiners, Sub-Aerial Modification, Sucker, Offset, Underground Modification, Tuber, Rhizome, Corn, Bulb, Special Stem Modification, Thorn, Cladode, Stem Tendrill, Bulbils, Angiospermic Seed Structure Of Seed, Seed Coat, Cotyledons (Seed Leaves), Structure Of Seed, Germination Of Seed, Epigeal Germination, Hypogeal Germination, Significances Of Seed, Viability Of Seeds, Factors Affecting Seed Germination,

Anatomy of Flowering Plants

Primary Structure Of Plants Plant Anatomy, Plant Tissue, Meristematic Tissue, Characteristics Of Meristematic Tissues, Classification Of Meristematic Tissue [A] Meristematic Tissue Based On Origin And Development, [B] Meristematic Tissues Based On Location (Position) In Plant Body, [C] Classification Based On Plane Of Division, [D] Classification Based On Rate Of Division, Composition Of Apical Meristem In Different Plants, Apical Cell Theory, Histogen Theory, Quiescent Centre, Tunica Corpus Theory, Mantle Core Theory, Newman's Theory, Korper-Kappe Theory, Permanent Tissues, Simple Tissues, Main Characteristics, Occurance, Type Of Collenchyma, Functions, Main Features, Type Of Sclerenchyma, Sclerenchymatous Fibres, Special Points, Complex Permanent Tissues, Special Tissues Or Secretory Tissue, Tissue System, Ground Tissue Culure, Vascular Bundles / Vascular Tissue System, Stele, Type Of Stele, Siphonstele Solenstel, Dictyostele Or Polystele, Eustele, Atactoste, Internal Structure Of Stems, Roots & Leaves, Internal Structure Of Dicot Stem, Internal Structure Of Monocotyledon Stem, Internal Structure Of Typical Dicotyledon - Root, Internal Structure Monocotyledon - Root, Internal Structure Of Orchid Root, Internal Structure Of Leaf, Difference Between Dicot Leaf (Dorsiventral) & Monocot (Isobilateral), Internal Structure Of Dorsiventral Leaves, Internal Structure Of Isobilateral Leaves, Vascular Bundles Of Leaves, Special Points, Anomalous Primary Structure, [1] Anomalous Structure In Dicotyledon Stem, Anoumalous Strucute In Monocot Stem, Special Point, (li) Anatomy - Secondary Growth, Secondary Growth In Dicot Stem, Special Point, lii. Formation Of Annual Rings (Springs Wood And Autumn Wood), B] Secondary Growth In Extra Stelar Region (Clork Cambium), Kinds Of Bark, Function, Secondary Growth In Dicot Root, Wound Healing, Abcisssion, Anomalous Secondary Growth In Dicot Stem, Anomalous Secondary Growth In Monocot Stem, Types Of Wood, Special Point, Important Comparison Tables,

Unit - Cell Biology

Cell: The unit life

Cell theory, Types of cells, Structure organization of a cell, Cell wall, Structure of the cell wall, Secondary wall (absent in meristem cell), Plasmodesmata, Lignification's, Growth of cell wall, Functions, points to be remembered always, Cell coat (glycocalyx), Plasma membrane, Plasma Membrane, Unit membrane model [1959] A.D., Fluidity of the cell membrane, Intrinsic proteins (70%), Chemical composition, Flip -flop concept in fluid mosaic model, Lomasomes/border Body, Diffusion, Endosmosis, Endocytosis (Bulk transport), Points to be Remembered always, Cytoplasm, Cell organelles. Mitochondria, detailed structure of crista, Function of mitochondria, plastids, Leucoplast, Amyloplast, Chromoplast, Chromoplast, contains following types of pigments, chloroplast, Chloroplast. Endoplasmic reticulum, Types of E. R, Microsomes, Golgi complex, Chemical composition, lysosome, Autophagic lysosomes (Auto phagosomes or cytolyosomes). Ribosome, chemical composition of ribosomes, Centrosome, cilia and Flagella, Rootlet Rhizoplast, vacuole, Functions of vacuole, Mircobodies, peroxisomes or Uricosomes, Spherosome, Glyoxysome, Microtubules, microfilaments, Cell inclusions, Starch Grains, Calcium oxalate -two types of crystals, Reserve material, Nucleus, nucleoplasm or karyolymph:- (Tern by strasburger 1882), Euchromatin, Chromosomes, Types of coiling in Chromonema, Centromere/kinetochore:- (Primary constriction), type of chromosomes on basis of position of centromere, Special type of chromosomes (giant chromosomes), Supernumerary/ B-chromosomes/Accessory chromosome, G-banding, R-Banding, New techniques for ideogram preparation, Flow cytometry, ideogram,

Cell Cycle and division

Cell Cycle,

Unit - Plant Physiology

Transport in plant

Plant water relation, diffusion pressure, signification of diffusion, Osmosis, Types of membrane, Selective permeable membrane or differentially permeable membrane, hypertonic solution, osmotic pressure (O.P.), the formula of Vont hoff for measuring O. P., Turgor pressure (T. P.). Diffusion pressure deficit (DPD) or suction pressure, water potential or YW, Plasmolysis, imbibitions, Long Distance transport of water, Mechanism of water absorption, water movement up a plant, transpiration pull, Transpiration, types of transpiration, Structure of stomata, opening of stomata in light, Plant factors, Demonstration of transpiration, Transpiration and photosynthesis -A compromise, uptake and transport of mineral nutrients, Phloem transport: Flow from source to sink, the pressure flow or mass flow hypothesis

Mineral Nutrition

Nutrition, Essential mineral Elements, Classification of Essential Elements, Classification of Essential Elements, micronutrients of trace elements, Macronutrients, Structural elements, Enzyme Activators or inhibitors, Maintaing osmotic potential, Deficiency symptoms of essential elements, Necrosis, Toxicity of micronutrients, Excess of MN causes, Mechanism of Absorption of Elements, Soil: As reservoir of essential elements, N₂metabolism, nitrogen fixation, Symbiotic N₂ Fixation (Diazotrophy) Mechanism of biological N₂ Fixation Nitrogenase

Photosynthesis in higher plants

Where does photosynthesis take place? Cyclic photophosphorylation, Chemiosmotie hypothesis. The C₄ Pathway (Hatch and slack Pathway), importance of C₄ plants.

Respiration in plants

Cell Respiration, Glycolysis, Krebs's cycle, Electron Transport System (ETS), Oxidation of Fatty Acids (β - Oxidation)

Plants Growth and Development

Arithmetic growth, Absolute growth rate, Auxin, Gibberellin (GA), Abscission. Phytochrome, Vernalization, Plant movements.

Unit - Reproduction in Plants

Reproduction in organism

Life Span, Basic features of reproduction, Duplication of cellular apparatus, Types of reproduction, Asexual reproduction, Binary fission, Budding, Sporulation Zoospores, Conidia, Fragmentation, Regeneration, Vegetative reproduction/propagation, There are two types of vegetative reproduction. Natural methods of vegetative reproduction, Stems, Underground stem, Rhizome, Bulb Subaerial stem, Sucker, Runner, Aerial shoots, Bulbils, Leaves, Roots, Artificial methods of vegetative reproduction, Cuttings, Stem Cuttings, Leaf Cuttings, Root Cuttings, Layering Tip layering, Trench layering, Gootee (Air layering), Grafting, Tongue (Slice or whip) Grafting Wedge Grafting, Crown Grafting, Approach Grafting, Bud Grafting, Micro propagation, Sexual reproduction, Phases in life cycle, Reproductive Phase, Categories of Gametes, Heterogametes Gamete transfer, Fertilization, External fertilization, internal fertilization.

Reproduction in organism

Life Span, Basic features of reproduction, Duplication of cellular apparatus, Types of reproduction, Asexual reproduction, Binary fission, Budding, Sporulation Zoospores, Conidia, Fragmentation, Regeneration, Vegetative reproduction/propagation, There are two types of vegetative reproduction. Natural methods of vegetative reproduction, Stems, Underground stem, Rhizome, Bulb Subaerial stem, Sucker, Runner, Aerial shoots, Bulbils, Leaves, Roots, Artificial methods of vegetative reproduction, Cuttings, Stem Cuttings, Leaf Cuttings, Root Cuttings, Layering Tip layering, Trench layering, Gootee (Air layering), Grafting, Tongue (Slice or whip) Grafting Wedge Grafting, Crown Grafting, Approach Grafting, Bud Grafting, Micro propagation, Sexual reproduction, Phases in life cycle, Reproductive Phase, Categories of Gametes, Heterogametes Gamete transfer, Fertilization, External fertilization, internal fertilization.

Sexual Reproduction in flowering plants

Plants, Reproduction –in flowering plants, Sexual reproduction, Male reproductive organ –Androecium, Tapetum of two types. Microsporogenesis, Structure of microspore or Pollen grain, Function of pollen kitt, Micro –Gametogenesis or development of male gametophyte, Pre Pollination Development, Post Pollination Development, Female reproductive organ –gynoecium, Structure of ovule or mega sporangium, Caruncle or Strophiole, Types of ovules, Hemitropous or hemi –anatropous ovule, Campylotropous ovules, Anatropous ovule, Amphitropous ovule, Circinotropous ovule. Megasporogenesis, Mega gametogenesis, Type of Embryo sacs, Pollination, Self-pollination or autogamy, Cross pollination or allogamy, Self-Sterility or self-incompatibility or intraspecific incompatibility, Self-incompatibility or intraspecific incompatibility Fertilization, Entry of pollen tube into ovule, Entry of pollen tube into Embryo sac, Fusion of gametes, Development of endosperm Development of embryo in monocotyledon Asexual reproduction, Androgenic haploid plants, Angiospermic seed structure of seed Non endospermic or Ex –Albuminous seed, Endospermic or Albuminous seed, Germination of seed, Factors Affecting seed germination

Unit - Genetics

Heredity and Variation

Somatogenic, Blastogenic variations, Discontinuous Variations, Early speculations (Premendelian), Pangenesis theory, Theory of germplasm Mendelism, Reasons for Mendel's success Inheritance of one gene, Concept of 'Factors'. Homozygous and heterozygous, Genotype and phenotype, Domination and recessive Concept of segregation, Punnett Square, Test cross, Law of Dominance, Law of segregation. Exceptions to Mendelian principles, Explanation of the concept of dominance, Multiple Allelism Inheritance of two genes. Complementary genes, Duplicate Genes. Polygenic inheritance or Quantitative inheritance, Chromosomal theory of inheritance. Linkage and recombination, Dihybrid crosses conducted by Morgan, Chromosomal mapping Sex determination. Sex determination in humans, Female heterogamety, Sex – Determination in honey bee Gynandromorphs, Sex linked inheritance Mutation, Gene mutation, Frame –shift mutation, Insertion or addition, Substitution, Transition, Trans version, Chromosomal Aberrations, Deletion, Duplication, Translocation, Inversion, Genomantic mutation, Aneuploidy. Mutagens, Genetic disorders, Mendelian disorders

Molecular Basis of inheritance

The DNA, DNA Structure The structure for genetic material, Properties of genetic material (DNA versus RNA), RNA world Replication, Messelson and stahl's experiment Transcription, Template strand and coding strand, Types of RNA and Process of transcription Genetic Code, Salient features of Genetic code, Mutations and genetic code, tRNA –the adapter molecule, there are three loops in tRNA, Translation. Regulation of Gene expression, Operon Concept, Lac operon Genes, Human genome Project (HGP), Methodologies, A representative diagram of human genome project, Salient features of human genome.

Unit - Biology and Human Welfare

Strategies for Enhancement in Food Production

Main Steps In Plant Breeding, Collection Of Germplasm, Evaluation And Selection Of Parents, Common Methods Of Crop Improvement, Dwarf Wheat, Hybrid Vigour (Heterosis), Plant Breeding For Disease Resistance, Plant Breeding For Developing Resistance To insect/Pests, Plant Breeding For Improved Food Quality/Biofortification, Examples, Single Cell Proteins (Scp), Tissue Culture, Callus And Suspension Culture, Shoot Tip Culture Or Production Of Disease Free Plants, Somatic Embryo Regeneration, Embryo Cultures, Haploid Culture/Androgenic Haploid Culture/Pollen Grain Culture, Application Of Tissue Culture.

Microbes in Human Welfare

Microbes In Household Products, Microbes In Industrial Products, Enzymes, Cyclosporin, Statins, Microbes In Sewage Treatment, Activated Sludge Method Of Sewage Treatment, Anaerobic Sludge Digester, River Action Plans, Microbes In Production Of Biogas, Microbes As Biocontrol Agents, Insect Hormones (Pheromones), Biofertilizer

Unit - Ecology and Environment

Organisms and its Population

Organisms And Its Environment, Major Biomes Of India, Major Abiotic Factors Temperature, Water, Light, Light Zonation Of Lakes, Zonation In A Lake, Soil, Eluviation And Illuviation, Soil Texture, Response To Abiotic Factors, Adaptations, Populations, Population Attributes/Group Attributes, Population Density, Age Ratio Pyramids, Population Growth, Emigration, Change The Color Combination Of This Figure Growth Models, Exponential (Geometric) Growths, Logistic Growth, Population Interactions.

Ecosystem

Important Facts About Ecosystem, Aquatic Ecosystem, Incomplete Ecosystem, Artificial Ecosystem, Structure Of Ecosystem, Abiotic, Biotic Components, Consumers, Decomposers, Scavengers, Stratification,

Boundaries Of Ecosystems, Productivity Of Ecosystem, Standing State Or Standing Quality, Standing Crop Or Standing Biomass, Gross Primary Productivity (Gpp), Net Primary Productivity (Npp), Secondary Productivity, Community Productivity, Decomposition, Decomposition Processes: Fragmentation Of Detritus, Leaching, Catabolism, Humification, Mineralization, Energy Flow, Food Chains, Types Of Food Chain Grazing Food Chain (Gfc), Detritus Food Chain (Dfc), Parasitic Food Chain / Auxillary Food Chain, Parasitic Food Chain, Food Web, Ecological Pyramids, Pyramid Of Number, Pyramid Of Biomass, Pyramid Of Energy, Limitations Of Ecological Pyramid, Nutrient Cycling, The Carbon Cycle, Phosphorus Cycle, Ecological Succession (By Hult), Process Of Succession, Major Trends During Succession, Contents Of Ecological Succession Lithosere (Stages): (Succession On Desert Or Rock), Hydrosere: (Succession On Pond), Ecosystem Services.

Biodiversity and Conservation

Important Facts About Ecosystem, Aquatic Ecosystem, Incomplete Ecosystem, Artificial Ecosystem, Structure Of Ecosystem, Abiotic, Biotic Components, Consumers, Decomposers, Scavengers, Stratification, Boundaries Of Ecosystems, Productivity Of Ecosystem, Standing State Or Standing Quality, Standing Crop Or Standing Biomass, Gross Primary Productivity (Gpp), Net Primary Productivity (Npp), Secondary Productivity, Community Productivity, Decomposition, Decomposition Processes: Fragmentation Of Detritus, Leaching, Catabolism, Humification, Mineralization, Energy Flow, Food Chains, Types Of Food Chain Grazing Food Chain (Gfc), Detritus Food Chain (Dfc), Parasitic Food Chain / Auxillary Food Chain, Parasitic Food Chain, Food Web, Ecological Pyramids, Pyramid Of Number, Pyramid Of Biomass, Pyramid Of Energy, Limitations Of Ecological Pyramid, Nutrient Cycling, The Carbon Cycle, Phosphorus Cycle, Ecological Succession (By Hult), Process Of Succession, Major Trends During Succession, Contents Of Ecological Succession Lithosere (Stages): (Succession On Desert Or Rock), Hydrosere: (Succession On Pond), Ecosystem Services.

Environmental Issues

Pollution and Its Types, Air Pollution And Its Control, Primary Air Pollutants, Secondary Air Pollutants, Photochemical Smog (Los Angeles Smog), Acid Rain: Corrosion Of Taj Mahal, Air Pollution Control, Controlling Vehicular Air Pollution, Noise Pollution, Effects Of Noise Pollution, Control Of Noise Pollution, Water Pollution And Its Control, Sources Of Water Pollution, Effects, Bio-Magnification, Eutrophication, Water Born Disease And Other, A Case Study Of Integrated Waste Water Treatment, Solid Wastes, A Case Study Of Solid Waste, Soil Pollution, Agrochemicals And Their Effects, Case Study Of Organic Farming, Radioactive Wastes, Green House Gases And Global Warming, Global Environment Change, Effects Of Green House Gases, Ozone Depletions, Deforestation, Water-Logging And Soil Salinity, Case Study Of People's Participation In Conservation Of Forests, Environmental Laws For Controlling Pollution, International Initiative.

Zoology

Unit - Animal Kingdom

Kingdom Animalia

Taxonomy, Organization Of Animal Body Levels Of Organization, Body Plan, Symmetry, Germ Layers, Cephalization, Segmentation, Respiratory System (Modes Of Respiration), Circulatory System, Excretory System, Nervous System, Skeleton, Body Temperature, Notochord, Reproduction, Birth, Development Direct Indirect And Metamorphosis Classification Of Animal Kingdom, Phylum, Phylum Porifera, Characters, Classification Of Porifera, Classification, Phylum Coelenterate, Classification, Trick Coelenterata (Cnidaria), Phylum Ctenophora, Phylum Platyhelminthes, Classification Of Platyhelminthes (Three), Fasciola Hepatica, Schistosoma (Blood Flukes), Phylum Nematelminthes Or Aschelminthes, Phylum Annelida, Classification Of Annelida, Phylum- Mollusca, Classification Of Mollusca, Phylum Arthropoda, Five Types Of Metamorphosis In Insects, Classification Phylum Echinodermata, Classification, Class Asteroidea (Gr. Aster = Star; Eidos = Form), Class Ophiuroidea, Class Echinoidea, Class Holothuroidea, Class Crinoidea, Phylum Hemichordata Or Stomochordata, Phylum Chordate, Other Chordate Characters Are, Sub-Phylum Urochordata (Tunicata), Sub-Phylum Cephalochordata, Sub-Phylum Vertebrata Or Craniata, Sub-Phylum

Vertebrata Or Craniata, Agnathostomata, Characters, Superclass Pisces, Class Chondrichthyes, Class Osteichthyes – Bony Fishes, Super-Class Tetrapoda, Class-Amphibians, Class Reptilia, Class Aves, Class Mammalia, Prototherians (Monotremes), Subclass 2. Theria Metatherians (Pouched Mammals), Eutheria

Unit - Animal Tissues and Structural Organization in Animals

Tissue & Types of Tissue

Tissue & Types Of Tissues, Epithelial Tissues, Characters, General Position, Steriocilia, Microvilli, Cilia Or Kinocilia, General Functions, Type Of Epithelial Tissues, Squamous Epithelium, Cuboidal Epithelium, Type Of Cuboidal Epithelia, Columnar Epithelium, Type Of Columnar Epithelia, Compound Epithelia, Stratified Squamous Epithelium, Transitional Or Plastic Epithelium, Three Special Types Of Epithelia, Myoepithelial Cells, Glandular Epithelia, Glands & Their Secretions, On The Basis Of Number Cells, Saccular (Acinal Or Alveolar) Glands, Muscular Tissues, General Structure, General Functions Of Muscular Tissue, Striated Muscles, Structure, Smooth Muscle Fibres, , Structure, Cardiac Muscles, Structure, Connective Tissue, Basic Structure, General Functions, Connective Tissue Proper, Adipose Connective Tissue, Sheaths, Connective Tissue Proper, Areolar (Loose Fibrous) Connective Tissue, Fibre Types, Cell Types, Function Adipose Tissue, White Fibrous Connective Tissue, Skeletal Tissue General Functions, Two Types Of Skeletal Tissue, Structure, Matrix, Bone, Matrix Of Bone, Structure Of Bone, Parts Of Bone, On The Basis Of Treatment: Bones Are Of Two Types, On The Basis Of Origin Of Bone, Vascular Tissue, Types Of Vascular Tissues, Blood, Number, Colour, Structure, Formation, Life Span, Types, Granulocytes, Blood Platelets, Thrombocytes, Lymph, Composition, Functions, Nervous Tissue, Nerve Processes, Neurons, Types Of Neurons, Motor (Efferent Neurons), Types Of Nerve Fibres, Number Of Sheaths, Axis Cylinder, Neurilemma, Structure, Schwann Or Sheath Cells, Neuroglia Or Glial Cells, Functions, Ependymal Cells, Neurosecretory Cells.

Cockroach

Systematic Position, Habitat, , Habits, Morphology, Shape, Size Colour And Symmetry, Exoskeleton, Head, Exoskeleton Of Head, Sense Organs, Compound Eyes, Antennae, Fenestrae Or Ocellar Spots, Mouth – Cervicum, Thorax, Sclerites, Appendages, Abdomen Sclerites, Anal Styles, Gonapophyses Or External Genitalia, Apertures, Internal Morphology (Anatomy), Body Wall, Digestive System, Mesenteron Or Ventriculus Or Midgut, Respiratory System, Excretory Organs, Central Nervous System, Circum-Oesophageal Nerve Ring, Endocrine Glands, Reproductive Male Reproductive System, Vasa Deferentia, Female Reproductive System, Copulation, Ootheca, Formation, Fertilization And Development, Interaction With Mankind, Harmful Activities, Useful Activities.

Frog

Systematic Position, Difference Between Frogs And Toads, Natural History, Habitat, Habit, External Morphology, Hind Limbs, Anatomy, Coelom (Body Cavity) Alimentary Canal, Mouth, Buccopharyngeal, Digestive Glands, Respiratory Organs, Heart, Blood, Sense Organs.

Earthworm

Systematic Position, Habitat, Habits, Locomotion, External Morphology, Shape, Size, Colour And Symmetry, Segmentation Metameric Segmentation, Clitellum (Or Cingulum), Apertures, Mouth, Anus, Female Gonopore, Male Gonopores, Genital Or Copulatory Papillae, Spermathecal Pores, Nephridiopores, Dorsal Pores, Internal Morphology (Anatomy) Body Wall, Setae, Coelom, Alimentary Canal, Anus, Respiration, Circulatory System, Hearts, Excretory System, Nervous System, Circum-Pharyngeal Nerve Ring, Reproductive System, Copulation And Development, Interaction With Mankind.

Unit - Bio-Molecules

Biomolecules

Introduction, These Biomolecules Occur In Two Forms, Micro Molecules In Cells, Carbohydrates, Monosugars, Functions Of Monosaccharides, Oligosaccharides, Differences Between Reducing And None Reducing Sugars, Functions, Lipids, Simple Lipids, Neutral Or True Fats, Glycerol, Fatty Acids, Differences Between Saturated And Unsaturated Fatty Acids, Differences Between Essential And Non-Essential Fatty Acids, Waxes, Compound Or Conjugated Lipids, Glycolipids, Lipoproteins Cutin And Suberin Derived Lipids, Steroids, Cholesterol, Ergosterol, Functions Of Lipids, Amino Acids, Zwitter Ionic Nature, Pvt. Tim. Hall, Composition Of Protein Amino Acids Functions Of Amino Acids, Nucleotides, Nucleosides And Nucleotides Of Dna And Rna, Functions Of Nucleotides, Differences Between Primary Metabolites And Secondary Metabolites, Macromolecules In Cell Polysaccharide, Structural Classification, Homopolysaccharids, Glycogen, Starch, Cellulose (Cellulin), Heteropolysaccharides, Molecular Structure Of Starch, Hyaluronic Acids, Chitin, Peptidoglycan, Function, Proteins, Four Structure Models Of Proteins, Tertiary Structure, Difference Between A-Helix And B-Pleated Sheet Model, Types Of Proteins Shape Of Molecules Fibrous Proteins, Globular Proteins, Components Of Molecules Simple Proteins, Conjugated Proteins, Functions, Nucleic Acids, Dna, Functions Of Dna, Rna: - Ribose Nucleic Acid (Rna), Differences Between Dna And Rna, Ribosomal Rna, Messenger Rna, Transfer Rna, Dynamic State-Concept Of Metabolism, Differences Between Anabolic And Catabolic Pathways, Role Of Enzymes In Metabolism, Role Of Enzymes In Metabolism, Enzymes, Properties Of Enzymes, Difference Between Inorganic Catalysis And Enzymes, Mechanism Of Enzyme Action Lock And Key Mechanism, Induced Fit Mechanism, Michaelis-Menton Hypothesis, Factors Affecting Enzyme Activity Temperature, Substrate Concentration, Presence Of Inhibitors, Non-Competitive Inhibition, Classification Of Enzymes, International System Of Enzyme- Classification, Naming Of Enzymes, Cofactors, Three Categories Of Cofactors.

Unit - Human Physiology

Digestion and Absorption

Human Digestive System, Mouth, Vestibule, Buccal (Oral) Cavity, Palate, Tongue Or Lingua, Teeth, Structure Of Teeth, Pharynx, Oesophagus, Small Intestine, Differences Between Jejunum And Ileum, Anus, Histology Of Gut, Human Digestive Glands, Pancreas, Intestinal Glands, Digestion Of Carbohydrate, Digestion In Oral Cavity, Digestion In Caecum, Digestion Of Cellulose Digestion Of Proteins, Small Intestine, Digestion Of Fat, Digestion Of Nucleic Acids, Role Of Gastrointestinal Hormones In Digestion, Absorption Of Digested Products, Length Of Intestine, Mechanism, Assimilation, Disorders Of Digestive System.

Breathing & Gases Exchange

Respiration, Respiratory Surface, Direct And Indirect Respiration, Respiratory Medium, Respiratory Structure For The Exchange Of Gases Indifferent Groups Of animals, Human Respiratory System Respiratory System In mammals, Respiratory Tract, Eicm, licm, External Nares (Nostrils), Nasal Chambers, Vestibular Part, Respiratory Part, Olfactory Part, Importance Of Nasal Breathing Internal Nares, Pharynx, Larynx Voice Box, Trachea, Primary Bronchi, Respiratory Organs, Mechanism Of Breathing Inspiration Phrenic (Radial) Muscles Of Diaphragm, Pulmonary Air Volumes And Lung Capacities, Tidal Value (Tv), Inspiratory Reserve Volume (Irv), Expiratory Reserve Volume (Erv), Vital Capacity (Vc) Of Lungs, Residual Volume (Rv), Inspiratory Capacity (Ic), Functional Residual Volume (Frc), Total Lung Capacity (Tlc), Respiratory Quotient (Rq) Composition Of Inspired, Expired And Alveolar Airs Exchange Of Gases, Partial Pressures, Lung, Uptake Of Oxygen By The Pulmonary Blood, Release Of Carbon Dioxide By Blood Tissues Transport Of Gases In Blood, Oxygen Transport, Oxyhemoglobin, Factors Affecting Oxygen Dissociation Curve Of Hemoglobin, Bohr Effect, Carbon Dioxide Transport, Physical Solution, Bicarbonate Ions, Chloride Shift/Hamburger Shift, As Carbaminohaemoglobin, Haldane Effect, Control Of Respiration, Nervous Control, Dorsal Respiratory Group Of Neurons, Ventral Group Of Neurons, Expiratory Centre, Pneumotaxic Centre, Apneustic Centre, Chemical Control, Disorders Of Respiratory System Hypoxia, Artificial hypoxia, Anaemic Hypoxia, Asphyxia/Suffocation, Bad Cold, Rhinitis, Sinusitis, Pharyngitis, Laryngitis, Bronchitis, Bronchial Asthma, Pneumonia, Emphysema, Occupational Respiratory Diseases.

Body Fluids and Circulation

Functions Of Circulatory System, Blood Vessels, Artery Or Vein, Capillaries, Regulation Of Blood Flow
Arterial Musculature: Muscles Present In Arterial Walls Pre Capillary Sphincters, Arterio-Venous Anastomoses, Different Type Of Blood Groups, Abo Blood Groups, Rh (Rhesus) System, Blood Clotting & Coagulation, Formation Of Prothrombin Activator, Intrinsic Pathway, Extrinsic Pathway, Conversion Of Prothrombin Into Thrombin, Conversion Of Fibrinogen Into Fibrin, Human Heart, Septum, Human Heart, Internal Structure, Histology, Artificial Pacemaker, Electrocardiogram (Ecg), Heart Rate Heart Output (Cardiac Output), Blood Pressure Stages, Cardiovascular Diseases, Lymphatic Capillaries, Lymphatic Capillaries, Functions Of Lymph Or Lymphatic System.

Excretory Waste and Their Elimination

Nitrogenous Waste Materials, Other Wastes, Meaning Of Homeostasis, Osmoregulation And Excretion
Excretion, Excretory Organs In Other Animals, Human Excretory Organs, Kidneys, Ureters, Urinary Bladder, Urethra, Nephrons, Types, Differences Between Cortical Nephron And Juxta-Medullary Nephron, Structure, Renal Corpuscle, Renal Tubule, Loop Of Henle, Dct:-Distal Convoluted Tubule (Dct), Collecting Duct, Physiology Of Excretion, Table 11. Summary Of Physiology Of Urine Formation, Pct Dct, Ct, Collecting Duct, Tubular Secretion, Countercurrent Mechanism Of Urine Concentration, Role Of Countercurrent Mechanism, Components Of Countercurrent Mechanism, Urine, Conduction Of Urine And Micturition, Regulation Of Kidney Function, Role Of Renin Angiotensinogen System In Osmoregulation, Atrial Natriuretic Factor (Anf), Functions Of Kidneys/Nephron Other Disorders Of Excretory System, Kidney Disorders, Artificial Kidney: Already Discussed. Kidney (Renal) Transplantation, Additional Excretory Organs.

Locomotion and Movements

Locomotion, Movements Non-Muscular Movements Protoplasmic Movements, Pseudo-Podial Movement, Flagellar Movements, Ciliary Movement, Ciliary Movement, Muscle System, Striated Muscle, Primary Myofilaments, Secondary Myofilaments (Myosin), Muscle Contraction Motor Unit, Innervation Of Skeletal Muscle All-Or-None Principle, Threshold Stimulus, Muscle Tonus (Tone), Summation, Muscle Contraction, Mechanism Of Muscle Contraction, Sliding Filament Theory, Electrical And Biochemical Event In Muscle Contraction, Energy For Muscle Contraction, Cori's Cycle, Muscle Fatigue, Oxygen Debt, Red And White Skeletal Muscles Fibres, Skeleton (Skeletal System), Cartilage, Bone Functions, Human Skeleton, Axial Skeleton, Skull, Cranium, Cranium = Part Of Face, Facial Bone – Vain Mm Plz, Hyoid Bone, Vertebral (Spinal) Columns, Cervical Vertebrae, Thoracic Vertebrae, Lumbar Vertebrae, Sacral Vertebrae, Coccygeal Vertebrae, Ribs, Appendicular Skeleton, Girdles, Pelvic (Hip) Girdle, Humerus, The Radius & Ulna, Carpal Bones, Carpal Bone-8 (Wrist Bone), Bone Of Hind Limb, Femur, Fibula, Tarsals, Phalanges, Tarsal, Summary Of Total Bones, Joints: Types Of Joints, Skeletal And Muscular Disorders, Arthritis (Aching Joints), Gout Or Gouty Arthritis, Fractures, Muscular Dystrophy.

Neural Control and Coordination

Neural Tissue, Nervous System In Invertebrates, Division Of Human Nervous System, Functions Of Nervous System, Central Nervous System, Fore Brain:- Forebrain (Prosencephalon, Olfactory Lobes, Cerebrum Fissures, Functions, Other Important Nuclei Are, Mid-Brain, Pons, Hind Brain, Cerebellum (Little Brain, Functions, Medulla Oblongata, Pons Varolii, Brain Stem, Cerebrospinal Fluid, Blood-Brain-Barrier (Bbb), Meninges, Spinal Cord, Histology, Cranial Nerves, Spinal Nerves, Spinal Nerves, Reflex Actions, Reflex Arc, Conditioned Reflexes, Parasympathetic Nervous System, Differences Between Sympathetic And Parasympathetic Nervous System, Autonomic (Visceral) Nervous System, Nerve Impulse, Neurotransmitters Neurotransmitters Or Neurohormone, Disorders Of Nervous System, Sensory Organs, Skin Receptors, Organs Of Taste, Organs Of Sight, 3rd Structure Of Eye, 2d Structure Of Eye, Structure, Iridial Part, Working Of Eye, Mechanism Of Vision, Common Eye Defects, Organs Of Hearing And Equilibrium, Structure:- External Ear, Middle Ear, Structure Of Macula, Semicircular Ducts, Cochlea Cross Section, Internal Ear.

Chemical Coordination and Intergration

Glands, Endocrine Glands And Hormones, Hormones, Definition, Chemical Nature (Classification): Chemical Nature Of Hormones, Coordination Between Endocrine And Nervous Systems Sympathetic Nervous System,

Human Endocrine Gland, Hypothalamus, Structure, Neurohormones, Pituitary (Hypophysis), Two Parts: Adenohypophysis And Neurohypophysis, Hormones Of Adenohypophysis, Their Physiological Effects And Disorders Due To Their Imbalanced Level, Hormones-Melatonin, Pineal (Epiphysis), Structure Hormones-Melatonin, Thyroid, Origin & Location, Structure, Hormones, Disorders Hypothyroidism, Cretinism, Myxedema, Parathyroid, Hypoparathyroidism- Parathyroid Tetany, Hyperparathyroidism- Osteoporosis, Thymus, Thymosine - A Polypeptide Hormone, Structure Hormone, Adrenals (Suprarenals), Adrenals (Suprarenals), Structure, Adrenal Cortex, Mineralocorticoids, Glucocorticoids, Sexocorticoids, Disorders, Adrenal Medulla: Hormones Of Adrenal Medulla, Role Of Epinephrine, Pancreas, Origin & Location, Structure, Hormones, All The Pancreatic Hormones Are Polypeptides, Gonads, Ovaries, Progesterone Relaxin, Placenta, Kidneys, Mucous Membrane Of The Elementary Canal (Gastrointestinal Mucosa), Placenta Estrogens, Progesterone And Hcghuman Chorionic Gonadotrophin, Other Endocrine Glands Heart, Liver, Mechanism Of Hormone Action, Role Of Hormones In Homeostasis, Insect Endocrine Glands.

Unit - Reproduction

Reproductions in Human

Organs Of Male Reproductive System In Human, Gametogenesis, Male Reproductive System, Scrotum, Primary Sex Organs, Testes, Functions Of Sertoli Cells, Interstitial (Leydig's) Cells, Secondary Sex Organs, Vasa Efferentia, Epididymis, Ejaculatory Duct, Urethra, Penis, Accessory Sex Glands, Prostate Gland, Cowper's Glands Or Bulbourethral Glands, Semen, Spermatogenesis, Structure Of Spermatozoon, Hormonal Control Of Spermatogenesis, Disorders Of Male Reproductive System, Female Reproductive System, Primary Sex Organ, Ovaries, Secondary Sex Organs, Fallopian Tubes Or Oviduct, Uterus, Vagina, External Genitalia, Vestibular Glands, Mammary Glands, Oogenesis, Structure Of Ovum, Comparison Of Egg And Sperm, Menstrual Cycle, Follicle Stage, Ovulation, Corpus Luteum, Menstruation, Hormonal Control During Puberty, Estrous Cycle, Disorders Of Female Reproductive System, Fertilisation And Implantation, Capacitation Of Sperms, Penetration Of Sperms, Acrosome Reaction- Hyaluronidase, Corona Penetrating Enzyme, Zona Lysine Or Acrosin, Fertilizing-Antifertilizin Reaction, Cortical Reaction And Zona Reaction, Cleavage, Blastulation, Implantation, Gastrulation Or Formation Of Germ Layers, Formation Of Primary Germ Layers, Foetal Membranes, Organogenesis, Placenta, Types Of Placenta, Functions Of Placenta, Parturition, Lactation, Development Disorders.



ENLIGHTENING YOUR FUTURE

Reproductive Health

Definition, Reproductive Health-Problems And Strategies, Human Population Explosion, Human Population Explosion, Population Control, Birth Control, Intrauterine Device (IUDs), Physiological (Oral) Devices Saheli, Mini Pill Or Progestin Only Pill (POP), Morning After Pill Or Emergency Contraceptive Pills, Injections Or Implants, Permanent Methods (Surgical Method) Vasectomy And Tubectomy, Medical Termination Of Pregnancy (MTP) Or Induced Abortion- Significance, Drawbacks, Sexually Transmitted Diseases (STD), Gonorrhoea, Syphilis, Trichomoniasis, Chancroid, Genital Warts, Genital Herpes, Aids, Infertility, Infertility In Females: The Main Reasons Of Infertility In Female Are, Assisted Reproduction Technologies (ART), Amniocentesis.

Unit - Evolution

Evolution

Origin Of Life- Biogenesis, Theory Of Catastrophism-George Cuvier, The Father Of Modern Paleontology 1796, Cosmozoic Or Interplanetary Theory Or Panspermia- Richter 1865, Theory Of Eternity- Proposed By Preyer (1880), Abiogenesis (Theory Of Spontaneous Generation)-Von Helmholtz, Redi's Experiments, 1668, Spallanzani's Experiment, 1767, Louis Pasteur's Experiment, 1867, Origin Of Earth & Evolution Of Earth, Haldane -Oparin Theory Of Origin Of Life, Urey Miller's Experiment, Evidences Of Evolution Morphological And Anatomical Evidences, Homology, Vertebrate Forelimbs, Brain And Heart Cervical Vertebrae In Mammals Insect Mouth Parts, Analogy Insect And Bird Wings Fins And Flippers Cephalopods And Vertebrate Eyes, Leaves And Cladodes, Tuberous Root And Potato, Stings Of Honeybee And Scorpion, Stem Tendrils Of Passiflora And Leaf Tendrils Of Pisum Sativum, Connecting Links Vestigial Organs, Atavism E.G. Multinippled Condition In Man, Embryological Evidences-Biogenetic Law By Ernst Haeckel, Palaeontological

Evidences, Kinds Of Fossils, Determination Of Age Of Fossils Relative Dating Methods, Absolute Dating Method-Based On Half Life ($T_{1/2}$) Of Radioactive Substance, Geological Time Scale, Missing Links Archaeopteryx Lithographica Ichthyostega Seymouria-Amphibian And Reptile, Biogeographical Evidences, Physiological And Biochemical Evidences, Classification Of Evolution, Microevolution, Macroevolution, Mega-Evolution, Convergent Evolution, Parallel Evolution, Adaptive Radiation, Co-Evolution, Retrogressive Evolution, Progressive Evolution:- Origin Of Chordates From Echinoderms, Lamarck's Theory Of Evolution, Inheritance Of Acquired Characters, Criticism Of Theory, Darwinism, Neo-Lamarckism, Darwin's Theory Of Natural Selection, Rapid Multiplication, Struggle For Existence, Intraspecific, Environmental, Variations, Natural Selection/Survival Of Fittest, Inheritance Of Useful Variations, Formation Of New Species, Criticism Of The Theory, Neo Darwinism, De Vries Mutation Theory, Mutational Theory Of Hugo De Vries And The Modern Concept, Modern Concept Of Evolution, Genetic Variation In Population, Hardy Weinberg Law, Genetic Drift, Founder Effect, Selection- Industrial Melanism, Natural Selection Stabilizing Or Normalizing Selection, Directional Or Progressive Selection, Disruptive Or Diversifying Selection, Speciation, Phyletic Speciation, Autogenous Transformation, Allogenuous Transformation, True Speciation, Pattern Of Speciation, Reproductive Isolation, Population Genetics: Hardy Weinberg Law, Species Concept Morphological Species Concept-Morphological Species Or Morphospecies, Biological Species Concepts- Biological Species Or Biospecies, Sibling Species, Cohesive Concept Species Ecological Species Concept Evolutionary Species Concept, Human Evolution Early Primates And Apes, Human Evolution, Similarity Between Apes And Humans, Differences Between Apes And Humans, Process In Human Evolution, Fossils Of Man, Dryopithecus Oreopithecus Ramapithecus Australopithecus, Homo Erectus, Human Races.

Unit - Biology and Human Welfare

Human Health & Disease

Human Health Is Affected By, Important Terminology, Diseases, Some Communicable Diseases In Human (Table), Human Health & Disease. Bacterial Disease, Trick To Remember Disease Caused By Protozoa, Trick To Remember Disease Caused By Fungus, Tricks For Autonomic Dominant Disease, Some Non-Communicable Diseases In Man, Hypersensitive Diseases, Cardiovascular Diseases, Atherosclerosis, Hypertension, Coronary Heart Diseases, Myocardial Infarction, Angina Pectoris, Heart Block, Heart Failure, Rheumatic Heart Disease, Arthritis, Osteoarthritis, Rheumatoid Arthritis, Septic Arthritis, Cancer, Classification Of Cancer, Immunity (Disease Resistance), Innate Or Inborn Immunity, Acquired Immunity, Cellular Barrier, Acquired Or Adaptive Immunity, Active Immunity, Passive Immunity, Non Specific Immune Response, Specific Immune Response, Disorders Of Immune System Allergy, Aids, Vaccination, History, Principle Of Vaccination, Types, Drugs And Their Abuse, Sedatives, Opiates – Narcotics, Stimulants, Structure Of Hiv, Target Cells Infection By Hiv, Target Cells Of Hiv, Transmission Of Hiv, Diagnosis Of Hiv Infection, Hallucinogenic Drugs (Psychedelic), Drug Addiction Tobacco Alcoholism And Cigarette Smoking.

Animal Husbandry

Live Stock, Breeds Of Indian Cows, Breeds Of Indian Buffaloes, Breeds Of Indian Horses, Breeds Of Pigs, Breeds Of Indian Sheep, Breeds Of Indian Goat, Animal Breeding, Method Of Animal Breeding, Inbreeding, Outbreeding, Outcrossing, Cross-Breeding, Inter Specific Hybridization, Controlled Breeding Experiments Artificial Insemination, Multiple Ovulation Embryo Transfer (Moet), Management Of Livestock, Cattle Management, Pisciculture, Steps Used In Pisciculture, Poultry, Indigenous Breeds, Exotic Breeds, Poultry Feed, Sericulture, Species Of Silkworm, Silk, Process Of Sericulture, Apiculture, Species Of Honeybees, Methods Of Bee-Keeping, Typical Movable Beehive, Products Of Bees, Beewax, Lac Culture.

Unit - Biotechnology

Biotechnology Principle and Processes

Biotechnology, Two Types, Two Main Principles, Principles Of Biotechnology, Basic Steps In Biotechnology, Chemical Engineering, Genetic Engineering, Tools Of Recombinant Dna Technology, Enzymes, Two Types Of Cleaving Enzymes Present Naturally In Cells, Restriction Endonuclease Enzyme, Types Of Restriction Endonuclease, Palindromic Sequence, (i) Synthesizing Enzymes, (ii) Joining Enzymes, (iii) Other Enzymes, Nomenclature, Recognition Sites And Types Of Cut, Types Of Restriction Enzymes, End Modification

Enzymes, Dna Ligase, Lyases, Synthetases, Cloning Vectors (Vehicle Dna), Essential Features Of Vector, Origin Of Replication, Marker Gene, Recognition Site, Types Of Vectors, Different Types Of Artificial Cloning Vectors, Plant And Animal Virusartificial Vector, Artificial Chromosome, Transposons, Bacteriophage Virus (Λ -Phage), Bacterial Artificial Chromosome (Bac), Gene Of Interest Alien Gene/Passenger Dna, Complementary Dna, Synthetic Dna, Dna Probes, Other Tools, Shotgun, Antisense Genes Techniques Used In Recombinant Dna Technology Gene Synthesis, Gene Synthesis-Artificial Synthesis Of Genes, Electrophoresis, Polymerase Chain Reaction (Pcr), Requirements And Steps, Applications, Southern Blotting, Northern Blotting, Western Blotting, Replica Plating, Process Of Recombinant Dna Technology, Isolation Of Genetic Material (Dna), Cutting Of Dna At Specific Locations, Amplification Of Gene Of Interest Using Pcr Insertion Of Gene Of Interest (Goi) Into Vector, Insertion Of Rdna Into Host Cell, Gene Transfer, Indirect Gene Transfer, Plant Tumours, Viruses, Bacteriophage, Adenovirus, Retrovirus, Directs Gene Transfer Physical Methods Of Gene Transfer Heat Shock, Electrophoration, Biolistic, Microinjection, Liposomes, Chemical Methods Of Direct Gene Transfer Polyethylene Glycol Medicated Transfer, Calcium-Phosphate Co-Precipitation, Selection And Screening Of Transformed Cells, Immunological Method, Nucleic Acid Hybridization, Insertional Inactivation, Obtaining Foreign Gene Product, Bioreactor, Simple Stirred-Tank Sparged Stirred-Tank, Downstream Processing.

Biotechnology and Its Application

Application Of Biotechnology, Application In Agriculture, Biotechnology Application In Medicine. Medicinal Gene Products, Insulin Production, Gene Therapy, Human Growth Hormone (Hgh), Antitrypsin (Aat)., Stem Cell Technology, Transgenic Animals, Study Of Physiology And Development, Vaccine Production, Monoclonal Antibodies, Ethical Issues In Biotechnology, Biopatent, A Patent Granted For, Biopiracy.



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Unit-Inorganic Chemistry

Hydrogen and S-Block Elements

Hydrogen, Occurrence, Preparation Of Hydrogen Gas, Properties Of Hydrogen, Hydrides, Water, Structure Of Water, Chemical Properties Of Water, Hydrogen Peroxide (H_2O_2), Physical Properties, Chemical Properties, Heavy Water, D_2O , S-Block Elements, Atomic And Ionic Radii, Ionisation Enthalpy, Melting And Boiling Points, Density, Electropositive Or Metallic Character, Oxidation States, Characteristic Flame Colouration, Photoelectric Effect, Physical Appearance, Reducing Nature, Chemical Properties, Anomalous Properties Of Lithium, Some Important Compounds Of Sodium, Atomic And Ionic Radii, Ionisation Enthalpies, Melting And Boiling Points, Electropositive Or Metallic Character, Hydration Enthalpies, Physical Appearance, Chemical Properties, Compounds Of The Alkaline Earth Metals, Anomalous Behaviour Of Beryllium, Some Important Compounds Of Calcium

p block elements part 1 Group 13/14

P Block Elements, Group 13 Elements: The Boron Family, Electronic Configuration, Atomic Radii, Ionisation Enthalpy, Electronegativity, Physical Properties, Group 13 Elements Atomic And Physical Properties,

Chemical Properties Oxidation State And Trends In Chemical Reactivity, Reactivity Towards Air, Reactivity Towards Acids And Alkalis, Diagonal Resemblance Of Boron With Silicon, Some Important Compounds Of Boron, Physical Properties, Electronic Configuration, Covalent Radius, Electronegativity, Ionisation Enthalpy, Reactivity Towards Halogen, Anomalous Behaviour Of Carbon, Carbon Monoxide, Properties, Silicates, Zeolites,

P Block Part 2 Group 15,16,17,18

Physical Properties, Nitrogen Gas, Nitric Acid, Phosphine, Chlorides Of Phosphorous, Group 16 Elements (Chalcogens), Reactivity With Hydrogen, Reactivity With Oxygen, Reactivity With Halogensoxygen, Ozone, Sulphur, Sulphur Dioxide, Sulphuric Acid, Group 17 Elements (Halogens), Anomalous Behaviour Of Fluorine, Ionisation Enthalpy, Electron Gain Enthalpy, Electronegativity, Bond Dissociation Enthalpy, Reactivity With H_2 , Reactivity With Metals, Inter-Halogen Compounds, Chlorine Gas, Hydrogen Chloride, Oxoacids Of Halogens, Group 18 Elements, Ionisation Enthalpy, Atomic Radii, Electron Gain Enthalpy, Melting And Boiling Point

D & F Block Element

D -Block Elements, General Characteristics Of Transition Elements, Magnetic Properties, Formation Of Complexes, Interstitial Compounds, Some Important Compounds, F-Block Elements,

Extraction of Metals

Extraction Of Metals Can Be Broadly Divided In Four Steps, Concentration Of Ores, Different Procedures For Concentration Of Ores, Hydraulic Washing, Magnetic Separation, Froth Floatation Method, Leaching, Conversion Of Concentrated Ore To Oxide, Reduction Of Oxide To The Metal, Types Of Iron, Wrought Iron, Electrolytic Reduction (Hall – Heroult Process, Extraction Of Copper From Cuprous Oxide [Copper(I) Oxide], Extraction Of Zinc From Zinc Oxide, Refining, Distillation, Liquation, Electrolytic Refining, Zone Refining, Vapour Phase Refining,

Coordinate Compounds

Naming Of Mononuclear Coordination Compounds, In Naming The Complex Ion, Some Common Ligands, Isomerism In Coordination Compounds, Geometrical Isomerism, Optical Isomerism, How To Find Hybridization Of Shape, Crystal Field Theory, Spectrochemical Series, Importance And Applications Of Coordination Compounds,

Unit-Organic Chemistry

Introduction to Organic Chemistry

Definition Of Organic Chemistry, Modern Definition Of Organic Chemistry, Reasons For Large Number Of Organic Compound, The Lewis Structures, Condensed Formula, Classification Of Organic Compounds, Acyclic Or Open Chain Compounds, Functional Group, Homologous Series, Nomenclature, Some Common Names, Part (A) Saturated And Branched Chain, Part (B) Unsaturated And Functional Groups, Priority Table, Part C. Cyclic Compounds, Part D: Aromatic, Purification And Elemental Analysis, Sublimation, Crystallisation, Distillation, Fractional Distillation, Distillation Under Reduced Pressure, Steam Distillation, Differential Extraction, Chromatography, Adsorption Chromatography, Column Chromatography, Thin Layer Chromatography, Partition Chromatography, Qualitative Analysis Of Organic Compounds, Detection Of Carbon And Hydrogen, Detection Of Other Elements, C, N, S And X Come From Organic Compound, Quantitative Analysis, Carbon And Hydrogen, Nitrogen, (I) Kjeldahl's Method, Organic Compound, Halogens (Carius Method), Sulphur, Phosphorus, Empirical Formula And Molecular Formula, Calculation Of Empirical Formula, Determination Of Molecular Mass, Chemical Methods: (I) Physical Methods For Volatile Compounds, Chemical Method, Platinichloride Method For Base, (ii) Volumetric Method For Acids And Bases, Calculations,

Isomerism and reaction mechanism

Isomerism, Structural Isomerism, Stereo Isomerism, Optical Isomerism, Reaction Mechanism, Introduction, Carbocations, Carbanions, Nucleophiles And Electrophiles, Inductive Effect, Resonance, Conditions For Resonance, Resonance Effect Or Mesomeric Effect, Hyper Conjugation, Electromeric Effect (E Effect), Strength Of Acid (In General Organic Chemistry), Addition Reactions, Electrophilic Addition Reactions, Nucleophilic Addition Reaction, Nucleophilic Add To Carbonyls, Free Radical Addition, Anti-Markownikoff's Rule (Kharash Peroxide Effect), Free Radical Addition Reaction (Is Shown Only By HBr, Substitution Reactions, Electrophilic Substitution Reaction (SE, Substitution Electrophilic And Addition Electrophilic, Nucleophilic Substitution Reactions, SN2 Reaction, Elimination Reactions, E1 (Elimination) Reaction, E2 (Elimination) Reaction

Hydrocarbon

Hydrocarbon (Alkanes/Alkenes/Alkynes And Benzene), Classification, Alkanes, Isomers, General Oxidation/Reduction, Reduction, Grignard Reagent, Hydroboration Or Alkane, Reduction Of Alcohols, Aldehyde, Ketones & Fatty Acids, Electrolysis Of Na Or K Salt Of Fatty Acids, Wurtz Reaction, Decarboxylation, Chemical Properties, In Case Of Bromination, Alkenes, Isomers, Physical State, Preparation Of Alkenes, Chemical Properties Of Alkenes, Preparation, Chemical Properties Of Alkynes, Aromatic Hydrocarbon, Aromatic Compounds Are Compounds Which Follow Following Rules. Properties Of Benzene, Directive Influence Of A Functional Group In Monosubstituted Benzene (In Substitution Electrophilic

Halogen Compounds

Halogen Compounds, Classification, Nomenclature, General Usage, Preparation, Important Notes, Addition Of Halogens, Physical Properties, Chemical Properties, Reaction With Metals

Alcohol Phenol Ether

Structure Of Alcohols, Phenols And Ethers, Allylic Alcohols, Benzylic Alcohols, Ethers, Nomenclature, Preparation Of Alcohol, Hydration Of Alkenes, Summary Of All Three Rxn, From Grignard's Reagent And Carbonyl Group, From Alkyl Halide, Use Of LiAlH_4 , Reduction By Catalytic Hydrogen, General Mechanism, Chemical Properties, Cleavage Of C-O Bond, Distinguish Between 1° 2° And 3° Alcohols, Auto Oxidation, Phenol, Physical Properties, Chemical Properties, Reaction On Benzene Nucleus (Substitution Electrophillic)

Ketones and Aldehydes

Structure Of The Carbonyl Group, Nomenclature Of Ketones And Aldehydes, Common Names, Physical Properties, Preparation & Aldehyde And Ketone, Chemical Properties, Reduction Of Carbonyls, Addition Reaction (Nucleophilic), Cannizzaro Reaction, Aldol Condensation, Tischenko Reaction, Aromatic Aldehyde And Ketone

Carboxylic Acid and Derivatives

Introduction, Classification, Structure And Physical Properties Of Carboxylic Acids, Acidity Of Carboxylic Acids Measurement Of Acidity, Common Reducing Agents And Their Reactions, Some Common Reactions Of Acid Salts, Carboxylic Acid Derivatives, Amides, Nitriles, Acids Halides, Acid Anhydrides, Preparation, Physical Properties, Chemical Properties Acid Halides, Esters

Nitrogen Compounds

Amines, Introduction, Classification, Nomenclature, Preparation, Secondary Amines, Tertiary Amine, Physical Properties, Chemical Properties, Aniline Preparation, Electrophilic Substitution, Sulphonation, Benzenediazonium Chloride, Cyanides And Isocyanides, Isocyanide Preparation, Nitro Compounds, Nitrobenzene, Chemical Properties

Organic Chemistry Biomolecules

Introduction, Another Classification, Glucose Properties, Haworth Projection Of Glucose, Fructose, Glycosidic Linkage, Disaccharides, Polysaccharides, Proteins, Amino Acids, Nonessential Amino Acids, Essential Amino Acids, Properties Of Amino Acids, Isoelectric Point, Structure Of Proteins, Classification Of Proteins, Denaturation Of Proteins, Enzymes, Function Of Enzymes, Mechanism Of Enzyme Catalysis, Different Enzymes And Their Action, Vitamins, Nucleic Acids, Basic Structure Of Nucleic Acid, Structure Of Dna, H-Bonds Between The Nitrogenous Bases In Dna, Replication Of Two Dna

Polymers and Chemistry in Everyday Life

Polymers, Classification Of Polymers Based On Source, Classification Of Polymers Based On Source, Classification Based On Mode Of Polymerisation, Classification Based On Monomers, Classification Based On Molecular Forces, Condensation Polymerisation Or Step Growth Polymerization, Some Important Condensation Polymers, Phenol Formaldehyde Polymer (Bakelite), Some Other Biodegradable Polymers, Chemistry In Everyday Life, Drugs, Chemicals In Food, Chemistry In Everyday Life, Soap And Detergents, Classification Of Drugs, Functions Of Enzymes, Enzymes As Drug Targets, Receptors As Drug Targets, Therapeutic Action Of Different Classes Of Drugs, Classification Of Analgesics, Different Types Of Food Additives, Types Of Soaps

Unit-Physical Chemistry

Some Basic Concepts of Chemistry

The SI Is Made Up Of 7 Base Units That Define The 22 Derived Units With Special Names And Symbols, Precision And Accuracy, Significant Figures, Rules For Determining The Number Of Significant Figures, Addition And Subtraction Of Significant Figures, Multiplication And Division Of Significant Figures, Rounding Off The Significant Figures, Laws Of Chemical Combinations, Atomic And Molecular Masses, Mole Concept, Conversion Of Mass & Volume To Moles, Molarity Molality, Mole Fraction And Normality, Percentage Composition, Stoichiometry And Volumetric, Limiting Reagent

Atomic Structure

Dalton's Atomic Theory, Success And Failures Of Dalton's Atomic Theory, Cathode Rays, Cathode Rays Are Negatively Charged, Cathode Rays Travel In Straight Line, Cathode Rays Are Particles, Charge /Mass (E/M) Ratio, Millikan's Oil Drop Experiment, Mass Of Electron, Anode Rays, Thomson Model Of Atom, Rutherford Model, Wave Nature Of Electromagnetic Radiation, The Spectrum Of Electromagnetic Radiation, Planck's Quantum Theory, Photoelectric Effect, Dual Behavior Of Electromagnetic Radiation, Types Of Spectrum (Can Be Classified In Two Different Ways) Bohr's Of Atom, Bohr Model Of The Hydrogen Atom, Success And Failures Of Bohr's Model Of Atom, Dual Behaviour Of Matter(De Broglie's Equation), Heisenberg's Uncertainty Principle, Schrodinger Wave Equation, Important Features Of The Quantum Mechanical Model Of Atom, Orbitals And Quantum Numbers, Orbit Vs. Orbital, Physical Significance Of The Quantum Numbers, 1s And 2s Orbitals, 2s And 2p Orbitals, Electronic Configuration Of Atoms, Pauli's Exclusion Principle, Hund's Rule Of Maximum Multiplicity, Exception: Half-Filled And Filled D Orbitals

Periodic Properties

Introduction, Law Of Triads, Law Of Octaves, Mendeleev's Periodic Table, Success Of Mendeleev's Work, Limitation Of Mendeleev's Table, Modern Periodic Table, Modern Periodic Law, Metals, Non Metals And Metalloids, Shielding Effect, Atomic Radii, Ionic Radii, Isoelectronic Species, Radii Of Isoelectronic Ions, Ionization Energy, First Ionization Energy (Ie1), Ionization Energy: Periodicity, Electron Affinity, Electron Affinity: Periodicity, Electronegativity

Chemical Bonding

Introduction, Lewis Structure, Ionic Bond, Born Haber Cycle For Sodium Chloride, Covalent Bond, Comparison Between Ionic And Covalent Bonds Coordinate Bond, Metallic Bond, Properties Of Metals & Non Metals, London Dispersion Force, Dipole - Dipole Forces, Dipole Induced Dipole Forces, Hydrogen Bond, Intra Molecular Hydrogen Bond, Hydrogen Bond Strength, Bond Length, Bond Angle, Bond Enthalpy, Lewis Structure, Octet Rule, Hybridisation And Shape, Rules To Find Hybridization And Shape (Homonuclear Molecular), Polarity In Covalent Bonds, Polarisation Of Ionic Bonds, Molecular Orbital Theory (MOT)

Gases And Liquids

States Of Matter, Gaseous State, Dalton's Law, Kinetic Theory Of Gases, Real Gas, Surface Tension

Dilute Solutions

Solutions, Binary Solutions, Types Of Binary Solutions, Concentration Of Binary Solutions, Henry's Law, Solutions Liquid In Liquid, Raoult's Law, Non Ideal Solutions, Solid In Liquid Solutions

Solid State

Network Solids, Bragg's Law, Fun Facts About Bragg's Law, Electrical Conduction, Types Of Semiconductors, Types Of Extrinsic Semi Conductors, Magnetic Properties, Properties Of Solids, Plane Of Symmetry, Centre Of Symmetry, Crystals Classification Based On The Nature Of Intermolecular Forces, Molecular Crystals, Crystal Lattices, Crystal Lattice Geometry, Cubic Unit Cells, Different Cubic Unit Cells, Number Of Atoms Per Unit Cell, Comparison Of Crystal Structures, Theoretical Density,

Energetics

Types Of System, Internal Energy, First Law Of Thermodynamics, Modified First Law Of Thermodynamics, Enthalpy, Gibb's Free Energy, Effect Of Temperature On Spontaneity Of Reactions, Thermo Chemistry, Specific Heats, Thermo Chemistry, Enthalpy Of Formation, Enthalpy Of Combustion, Enthalpy Of Atomization, Bond Enthalpy, Enthalpy Of Neutralization, Enthalpy Of Phase Change, Bomb Calorimeter

Chemical Kinetics

Average Rate Of Reaction, Rate Of Reaction, Law Of Mass Action, Collision Theory, Reaction Mechanism, Rate Determine Step, Half Life And Average Life, Zero Order Reaction, First Order Reaction, Factors Affecting Rate Of Reaction, Temperature And Activation Energy, Arrhenius Equation (Dependence Of K On Temp), How To Find Order Of Reaction

Equilibrium

Physical Equilibrium, Physical Equilibrium, Dynamic Equilibrium, Chemical Equilibrium, Le Chatelier's Principle, Ionic Equilibrium, Ionisation Of Acids And Bases, Ionic Equilibrium, Common Ion Effect, Buffer Solution, Hydrolysis Of Salt, Solubility Product Of Sparingly Soluble Salt

Electrochemistry

Electrolysis, Electrolysis, Products Of Electrolysis, Aqueous Copper Sulphate With Platinum Electrodes, Conductance And Conductivity, Kohlrausch's Law, Electrochemical Cell, Commercial Dry Cell

Surface Chemistry

Enthalpy Or Heat Of Adsorption, Adsorption Isotherm, Freundlich Adsorption Isotherm, Catalysis, Types Of Catalysis, Homogeneous, Activity Of Catalyst, Selectivity Of Catalyst, Adsorption Theory Of Heterogeneous Catalysis, 2. Lowering Of Activation Energy, Shape-Selective Catalysis, Enzymes, Steps Of Enzyme Catalysis, Characteristics Of Enzyme Catalysis, Colloids, Classification Of Colloids, Methods Of Preparation Of Colloids, Dialysis, Electrodialysis, Ultrafiltration, Ultracentrifugation, Properties Of Colloids

Redox Reactions

Balancing Of Redox Reactions, This Is Balanced Equation

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Neet Physics Syllabus 2021

Unit - Mechanics

Basics Physics

Differentiation, applications, more details on differentiation, double functional differentiation, differentiation of trigonometric functions, differentiation of exponential and logarithmic Function, Integration, application, definite integration, integration of different functions, mathematic tools, graph, quadratic equation,

Units and Dimensions

Units and dimensions, fundamental physical quantities, units, symbols, supplementary units, systems of units, (1) mks and mksa system, (2) si system (international system), (3) cgs system, (4) fps system. Applications of dimensional formulas,

Errors

Errors, finding quantity, least count and different units, unique concept, significant figures,

Vectors and Scalars

Vector and scalars, physical quantity ($n + u + \text{direction}$) may/must have, representation of vector, standard unit vector, understanding of unit vectors, direction, addition and subtraction of vectors, resolving of any vector, Scalar or dot product, using right hand screw rule, area of triangle, diagonal of parallelogram

One dimensional motion (1-d Motion)

Kinematics, basic terms in kinematics, understanding of displacement and distance, velocity, Mean or average velocity

Projectile motion(2-D Motion)

1-d motion, 2-d motion or motion in a plane, 3-d projectile motion, vertical mirror, horizontal mirror, condition, same range, Trajectory (path) of projectile, other forms of equation of trajectory, in horizontal mirror

Relative motion

Relative motion

Circular Motion

Horizontal circular motion, to prevent outward sliding, conical pendulum, Vertical circular motion, string mass system, rim & mass system, rigid rod and mass system, incomplete circle, radius of curvature

Law of Motion and Friction

Rough inclined plane

Center of Mass & Momentum

Centre of mass and momentum, to locate centre of mass, location of c.m of some homogeneous rigid bodies, concepts based on location of cm, concept of acceleration of cm, Linear momentum, changing in momentum, changing in momentum, oblique collision, concept of exchange, Newton's law for collision

Work Power Energy

Work done, kinetic energy, by the $u - r$ graph, types of potential energy, (1) stable equilibrium, (2) unstable equilibrium, (3) neutral equilibrium, conservative and non-conservative force, constant power

Gravitation

Newton's law of gravitation, properties of gravitational force, gravitational field, gravitational field of earth here we are assuming, 3) due to rotation of earth, using law of parallelogram, gravitational potential, potential energy for system of particles, orbital velocity, kinetic energy, potential energy, kepler's law, (2) law of area, (3) law of periods

Rotation

Moment of inertia of a single particle, moment of inertia of a rigid body, radius of gyration

Unit - Properties of Matter & Fluid Mechanics

Fluid Mechanics

Introduction, Density, Pressure in a fluid, Pressure, Depth, and Pascal's Law, Absolute pressure, Gauge pressure and pressure gauges, Buoyancy, Archimedes's principle states, Fluid Flow, The Continuity Equation, Bernoulli's Equation, Turbulence, Surface Tension, Pressure inside a bubble, Capillarity, Viscosity,

Waves

Introduction, Types of Mechanical Waves, Periodic Waves, Wave Function for a sinusoidal wave, Speed of a Longitudinal wave, Sound Waves in Gases, Normal Modes of a String, Boundary Conditions and Superposition, The Principle of Superposition, Standing Waves on a String, Organ pipes and wind instruments, The Doppler Effect, Moving Listener, Moving Source and Moving Listener,

Simple Harmonic Motion

Introduction, Simple Harmonic Motion, Equations of simple harmonic motion, The Simple Pendulum, Displacement, Velocity and Acceleration in SHM, Energy in Simple Harmonic Motion, Applications of Simple Harmonic Motion, Vertical SHM, Angular SHM,

Gravitation and Satellite

Newton's Law of Gravitation, Determine the value of G, Gravitational Potential Energy, Apparent Weight, The Motion of Satellites, The Motion of Planets, Kepler's first Law, Kepler's second Law, Kepler's second Law,

Unit - Thermal Physics

Thermometry and Thermal Expansion

Classification of Thermal Physics, Thermometry, Thermometer, Temperature, Temperature Scales, Temperature Difference, Faulty Thermometer, Zeroth Law Of Thermodynamics, Constant -Volume Air Thermometer, Merits Of Gas Thermometer, Demerits of Gas Thermometer, Standard Constant Volume Gas (Hydrogen) Thermometer, Platinum Resistance Thermometer, Advantage Disadvantage, Total Radiation Pyrometer, Optical Pyrometer, Range of Different Thermometers, Isotropic Substance, Anisotropic Substance, Types of Expansion, Application of Linear Expansion, Areal Expansion or Superficial Expansion, Volume Expansion or Cubical Expansion, Apparent Expansion of Liquid, Application of Thermal Expansions, Anomalous Behavior of Water

Calorimetry

Calorimetry

Thermodynamics

Thermodynamics System, Thermodynamics Process, Volume, Internal Energy (U), Work Done, Sign Convention, Types of Specific Heat, Degree of Freedom, Graphically, The Second Law of Thermodynamics, Refrigerators and Heat Pumps, Carnot Engine, the Carnot Cycle.

Kinetic Theory of Gases

Gasses, Charle's law, Gay-Lussac's Law or Pressure Law, Avogadro's Law, Graham's Law of Diffusion, Dalton's Law of Partial Pressure, Equation of State or Ideal Gas Equation, Pressure of An Ideal Gas, Instantaneous Velocity, Time During Collision, Collision Frequency (N), Change In Momentum, Force on Wall, Pressure, Root Mean Square Speed, Most Probable Speed, Average Speed, Mean Free Path, Law of Equipartition of Energy [Boltzmann Law], Specific Heat (C_p And C_v) of A Gas, Specific Heat At Constant Volume (C_v), Specific Heat At Constant Pressure (C_p), Vander Waal's Gas Equations, Relation Between Vander Waal's Constants And T_c , P_c , V_c .

Heat Transfer

Thermal Conduction, Convection, Radiation, Thermal Conduction, Thermal Resistance, Combinations of Slabs, Parallel Combination, Interaction of Radiation With Matter, Different Bodies, Emissive Power, Absorptive Power And, Emissivity, Total Emittance or Total Emissive Power (E), Monochromatic Absorptance or Spectral Absorptive Power (A_λ), Total Absorptance or Total Absorbing Power (A), Emissivity (e), Perfectly Black Body, Kirchhoff's Law, Stefan's Law, Rate of Loss of Heat (R_h) And Rate of Cooling (R_c), Rate of Loss of Heat (or Initial Rate of Loss of Heat), Initial Rate of Fall In Temperature (Rate of Cooling, Newton 'S Law Cooling, Wien's Displacement Law, Temperature of The Sun And Solar Constant.

Unit - S.H.M & Waves

Simple Harmonic Motion

Motion, Periodic Motion, Fixed Period Periodic Motion, Maximum And Minimum Values of Displacement, Velocities And Acceleration, Simple Pendulum, Conclusions, In Side Any Lift, In Side Any Vehicle, Spring Pendulum, Concept of Reduced Mass, If Anyone Mass Is Very Heavy, Spring Block System, Elastic Wire, Partially Submerged Floating Body, Liquid In Side U Tube, Compound Pendulum (or Physical Pendulum), Torsional Pendulum, Energy, Combinations of Springs, Mixed Combination, Cutting of Spring, Damping And Damped Oscillations, Amplitude of Damped Oscillations.

Progressive Wave and Speed of Mechanical Wave

Medium: Properties, Transverse Waves (T.Waves), Longitudinal Waves (L.Waves), Progressive Waves, Maximum Particle Speed, Phase Difference And Path Difference, Path Difference, Speed of Mechanical Waves, For Solids Medium, For Liquids Medium, Laplace's Correction, Temperature Difference, Pressure, Density, Humidity.

Stationary Waves & Beats

Speed of T - Waves Along The String, Reflection of T- Waves, Formation of Nodes And Antinodes, Harmonics of Vibrating String, For String With Attached Mass, For String Without Attached Mass, Stationary Wave or Standing Wave, Equations of Standing Waves, Waves, Tuning Fork, Number of Beats, Waxing and Filing, For N Tuning Fork

Interference and Organ Pipe

Interference, Intensity of Wave, For Better Interference, Organ Pipe, Closed Pipe, End Correction

Doppler's Effect

Case I:- Source at rest, observer moves, Case II:- observer at rest, Source moves, Case III:- Both source and observer are in motion, Doppler's Effect, Doppler's Effect In Light, Types of Sound Waves, Loudness

Unit - Magnetism

Moving Charge in Magnetic Field

History, Natural Magnet, Magnetic Force, Direction Of F_m , Right Hand Rule, Left Hand Rule, Zero Magnetic Force, Deviation Of A Charged Particle In Magnetic Field.

Electromagnetic Field

Biot Savart Law, Application Of Biot Savart Law, Ampere's Circuital Law, Magnetic Field Due To A Cylindrical Wire.

Force and Torque in Magnetic Field

Magnetic Force On A Current Carrying Conductor, Force Between Parallel Current Carrying Wires, Magnetic Dipole, Refer Figure (A), Refer Figure (B), Refer Figure (C), Torque, Force Between Two Moving Charges, Standard Cases For Force On Current Carrying Conductors, Moving Coil Galvanometer.

Earth's Magnetism

Bar Magnet, Elements Of Earth's Magnetic Field, Tangent Law, Magnetic Materials, Ferromagnetic Material, Comparison Between Soft Iron And Steel, Comparatively Study Of Magnetic Materials.

Electromagnetic Induction

Magnetic Flux, Faraday's Law, Lenz's Law, Motional Electromotive Force, Motional Emf Induced In A Rotating Bar, Self Inductance, Kirchhoff's Second Law With An Inductor, Energy Stored In An Inductor, Mutual Inductance, First Definition, Second Definition, Combination Of Inductances, In Parallel, Inductance Of A Solenoid, Mutual Inductance Of A Solenoid Surrounded By A Coil, Eddy Current, Induced Electric Field.

Alternating Current Circuits

Alternating Current And Voltage, Circuit Elements In Ac Circuits, A Resistor In An Ac Circuit, An Inductor In An Ac Circuit, A Capacitor In An Ac Circuit, Terminology And Analysis Of Series Ac Circuits, Ac Applied To L-R Circuit, Ac Applied To C-R Circuit, Ac Applied To L-C Circuit, Power In Ac Circuit And Choke Coil (A) Power In Ac Circuits, Transformer, Types Of Transformer, Efficiency Of Transformer (η).

Unit - Optics & Wave Optics

Reflection

Review of Light, Electromagnetic Spectrum, Point Object, Linear Object, Linear Magnification

Refraction through Plane Surface

Refractive Index, Properties Of Refractive Index, Single Refraction From A Plane Surface, Refraction Through A Glass Slab, Total Internal Reflection (Tir), Totally Reflecting Prisms, Refraction through Prism, Dispersive Power,

Refraction through Spherical Surface

Refraction From A Single Spherical Surface, Refraction From A Double Spherical Surface, Thin Lenses, Thin Lenses, Lens Maker's Formula And Lens Formula, Formation Of Image By A Convex Lens, Formation Of Image By A Concave Lens, Cutting of Lenses, Defects in Lens, Power Of Lens

Optical Instruments

Human Eye, Defects In Eye, Microscope, (1) Simple Microscope, (2) Compound Microscope, Astronomical Telescope (Refracting Type), Terrestrial Telescope, Terrestrial Telescope, Gallilean Telescope, Gallilean Telescope, Resolving Limit And Resolving Power

Interference in Light

Interference, Conditions, Resultant Amplitude Or Intensity, Interference In Thin Films, Interference In Thin Films, Interference In Thin Films, Interference In Reflected Light, Polarization Of Light, Malus Law, Methods Of Producing Plane Polarized Light

Wave Optics

Young's Double Slit Experiment (Ydse), Young's Double Slit Experiment (Ydse), Young's Double Slit Experiment (Ydse), Lloyd's Mirror, Missing Wave Lengths, Diffraction Of Light, Central Maxima

Unit - Modern Physics

Atomic Physics and Spectrum

Dual Nature Of Electromagnetic Waves, De - Broglie Wavelength Of Matter Wave, De - Broglie Wavelength Associated With The Particles, Rutherford Scattering, Observation, Impact Parameter (B), Number Of Particles Scattered Per Unit Area, Distance Of Closest Approach (Nuclear Dimension), Bohr's Atomic Model, Bohr's Postulates, Radius Of Nth Bohr's Orbit, Velocity Of Electron In Nth Bohr's Orbit, Kinetic Energy Of Electron In Nth Bohr's Orbit, Potential Energy Of Electron In Nth Bohr's Orbit, Total Energy Of Electron In Nth Bohr's Orbit, Some Other Quantities For Revolution Of Electron In Nthorbit, Ionisation Energy, Spectrum, Emission Spectra, Absorption Spectra, Spectral Series For H - Atom, Balmer Series, Paschen Series, Bracket Series, Pfund Series, Humphrey Series

Photoelectric Effect

Emission Of Electrons, Thermionic Emission, Secondary Emission, Photo Electric Emission, Work Function, Photoelectric Effect, Photo Electric Current, Photo Electric Current, Graph, Compton Effect, Davisson And Germer Experiment, Radiation Pressure, Automatic Door

X -Rays

Electromagnetic Spectrum, X - Rays, Production Of X-Rays, Continuous X-Rays, Characteristic X-Rays, Moseley's Law For Characteristic Spectrum, Absorption Of X-Rays, Types Of X -Rays, Properties Of X -Rays, C.R.O Tube, Application Of Electric Field, Application Of Magnetic Field

Nuclear Physics

Size Of Nucleus, Radio Activity, α - Decay, Radioactive Series, β - Decay, Decay Law, Decayed Nuclei, Probability For Survival, Half Life, Mean Life, Nuclear Reactors,

Unit - Electrostatic and Current Electricity

Electric field and Potential

Electric Charge, Fundamental Charge Particles, Positive Charge Body, Negative Charged Body, Uncharged Body, Amount Of Charge, Units Of Charge, Conversion, Ways To Charging A Body, Properties Of Charges, Accelerated Charge, Attraction Or Repulsion, Attraction Or Repulsion, Charge Resides On The Outer Surface Of A Conductor, Charge Resides On The Inner And Outer Surface Of A Insulator, Charge Resides On The Outer Surface Of A Conductor, Distribution Of Charge In Conductors, Coulomb's Law (For Two Point Charges At Rest), The Magnitude Of The Resultant Of Two Electric Forces Is Given By, For Problem Solving Remember Following Standard Results, Electric Field, Electric Field Intensity, Electric Lines Of Force, Individual Charges, Pair Of Unlike Charges, Pair Of Like Charges, Some Basic Terms, Electric Potential, Electric Field And Potential Due To Various Charge Distribution, Electric Field Due To Bending Of Charged Rod, Relation Between Electric Field And Potential, Equipotential Surface, Electrostatic Potential Energy, Equilibrium Of Charges, Electric Dipole, Dipole Moment, Maximum Torque, Minimum Torque, Work Done In Rotation Dipole In A Uniform Electric Field, Work Done In Rotational By, Electric Field Due To A Dipole At Any General Position

Gauss's Law

Electric Flux, Charged Cylinder

Capacitor

Capacitor, Objectives Of Capacitor, Units Capacitance, Types Of Capacitors, Earthed Spherical Capacitor, Earthed Concentric Spherical Capacitor, Spherical Earthed Capacitor, Parallel Plate Capacitor, Cylindrical Capacitor, Capacitor Partially Filled With Dielectric, If N Dielectrics, If Completely Filled By Dielectric, If Completely Filled By Conducting Slab, Combinations Of Capacitors, Properties Of Series Combination, Special Cases, Parallel Combinations, Properties Of Parallel Combinations, Special Cases, Mixed Combinations, 5 Capacitors In Parallel, (ii) Identical Plates And Are At Same Gap With Each Other, Possible Capacitors, Possible Capacitors, Dielectric Between Plates Of Capacitors, Energy Stored In A Capacitor, Redistribution Of Charge, Initially, Energy Loss, Important Point

Current Electricity

Electric Current, Types Of Electric Current, Electric Current Vector Or Scalar, Electrical Circuit, Current Density, Resistivity, Resistor, Colour Table, Fourth Band, B.B. Roy Of Grait Britain Has A Very Good Wife, Important Point, Electromotive Force (Emf), Kirchhoff's Junction Law (Kjl), Kirchhoff's Voltage Law (Kvl), Kirchhoff's Voltage Law (Kvl, Combination Of Resistors – Series And Parallel, Delta To Star Transformation, Series Grouping, Parallel Grouping, Mixed Grouping, Galvanometer, Voltmeter, Potentiometer, Principle Of Wheatstone's Bridge, Meter Bridge

Thermal and Chemical Effect of Current

Electric Power, Electricity Consumption, Combination Of Bulbs, Faraday's Laws Of Electrolysis

Unit - Electronics

Semi Conductor

Solids And Semiconductor, Crystalline, Amorphous, Holes, Classification Of Solids On The Basis Of Band Theor Conductivity Of Solid, Valence Band And Conduction Band, Conductors, Insulators, Semiconductors, Intrinsic Or Pure Semiconductors, Types Of Solid, Extrinsic Or Doped Semiconductors, Densities Of Charge Carriers, Electrical Properties Of Semiconductor

Semi Conductor

And P – N Junction Diode, Depletion Region, Symbol, Symbol, Special Purpose Diodes, P – N Junction Diode As Half – Wave Rectifier, P – N Junction Diode As Full – Wave Rectifier, Transistor, Working Of P – N – P Transistor, Working Of N – P – N Transistor, Different Modes Of Operation of A Transistor, Ce Configurations, Input Characteristics, Output Characteristics, Transistor As An Amplifier, Npn Transistor As Ce Amplifier, Npn Transistor As Ce Amplifier, Different Gains In Ce/Cb Amplifiers (1) Transistor As Cb Amplifier, Transistor As Ce Amplifier, Comparison Between Cb, Ce And Cc Amplifier, (a) (b)–Parameters, Diode And Triode, Diode Value, Working Of Diode, Diode Characteristics, Triode Valve, Characteristic Constant, Amplification Factor (M), Internal Resistance (R_p), Mutual Conductance (G_m), Relation Between Three Constant

Logic Gates

Truth Table, Boolean Expression, Binary System, Type Of Gate

Electromagnetic Wave

Electromagnetic Waves, Electromagnetic Waves, Maxwell's Contribution, Properties Of Em Waves, Uses Of Em Spectrum

Communication

Basic Communication System, Different Channels, Types Of Communication System, Few Digital Communication System, Analog And Digital Signals, Modulation, Need For Modulation, Amplitude Modulation (Am), Amplitude Modulation (Am), Limitation Of Amplitude Modulation, Frequency Modulation (Fm), Space Communication, Sky Wave Propagation, Sky Wave Propagation, Space Wave Propagation, Space Wave Propagation, Microwave Communication, Optical Fiber, T.V. Signals

