

SYLLABUS - 2021 - 2022

STANDARD : 10

SUBJECT : SCIENCE

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1. Laws of Motion	Introduction 1.1 Force and Motion 1.2 Inertia 1.2.1 Types of Inertia 1.2.2 Examples of Inertia 1.3 Linear Momentum 1.4 Newton's Laws of Motion 1.4.1 Newton's First Law 1.4.2 Force 1.4.3 Types of forces 1.4.4 Resultant Force 1.5 Newton's Second Law of Motion 1.7 Newton's Third Law of Motion 1.9 Rocket propulsion 1.10 Gravitation 1.10.1 Newton's Universal law of gravitation 1.11 Mass and Weight

2. Optics	Introduction 2.1 Properties of light 2.2 Refraction of Light 2.2.1 First Law of Refraction 2.2.2 Second Law of Refraction 2.3 Refraction of composite Light - Dispersion of Light 2.5 Lenses 2.5.1 Other Types of Lenses 2.6 Images formed due to refraction through a convex and concave lens 2.7. Refraction through a convex lens 2.8 Applications of a Convex lens 2.9 Refraction through a concave lens 2.10 Applications of concave lenses 2.11 Lens Formula 2.12 Sign Convention 2.16 Human eye 2.17 Defects in eye
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5. Acoustics	<ul style="list-style-type: none">Introduction5.1 Sound waves<ul style="list-style-type: none">5.1.1 Longitudinal Waves5.1.2 Categories of Sound waves based on their frequencies5.1.3 Difference between the sound and light waves5.2 Reflection of sound<ul style="list-style-type: none">5.2.1 Laws of reflection5.2.2 Reflection at the boundary of a denser medium5.2.3 Reflection at the boundary of a rarer medium5.2.4 Reflection of sound in plane and curved surfaces5.3 Echoes<ul style="list-style-type: none">5.3.1 Conditions necessary for hearing echo5.3.2 Applications of echo
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6. Nuclear Physics	Introduction 6.1. Radioactivity 6.1.1 Discovery of radioactivity 6.1.2 Definition of radioactivity 6.1.3 Natural Radioactivity 6.1.4 Artificial Radioactivity (or) Induced Radioactivity 6.1.5 Units of Radioactivity 6.2. Alpha, beta and gamma rays 6.2.1 Properties of Alpha, Beta and Gamma rays 6.2.2 Radioactive displacement law 6.2.3 Alpha decay 6.2.4 Beta decay 6.2.5 Gamma decay 6.5. Uses of Radioactivity 6.5.1 Agriculture 6.5.2 Medicine 6.5.3 Industries 6.5.4 Archaeological Research 6.6. Safety measures 6.6.1 Permitted range 6.6.2 Preventive Measures
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<p>8. Periodic Classification of Elements</p>	<p>Introduction</p> <p>8.1 Modern periodic law</p> <p>8.2 Modern periodic table</p> <p>8.2.1 Features of periods</p> <p>8.2.2 Features of groups</p> <p>8.6. Properties of metals</p> <p>8.6.1 Physical properties</p> <p>8.6.2 Chemical properties</p> <p>8.10 Alloys</p> <p>8.10.1 Amalgam</p> <p>8.10.2 Method of making alloys</p> <p>8.10.3 Types of alloys</p> <p>8.11 Corrosion</p> <p>8.11.2 Methods of preventing corrosion</p>

9. Solutions	Introduction 9.2 Components of solutions 9.3 Types of solutions 9.3.1 Based on the physical state of the solute and the solvent 9.3.2 Based on the type of solvent 9.3.3 Based on the amount of solute 9.3.4 Concentrated and dilute Solutions 9.6 Hydrated salts and water of crystallization
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	<p>9.6.1 Copper sulphate pentahydrate</p> <p>9.6.2 Magnesium sulphate heptahydrate</p> <p>9.7 Hygroscopy</p> <p>9.8 Deliquescence</p>
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11. Carbon and its Compounds	11.5 Nomenclature of organic compounds 11.5.1 Why do we need nomenclature? 11.5.2 Components of an IUPAC name 11.5.3 IUPAC rules for naming organic compounds 11.5.4 IUPAC nomenclature of hydrocarbons – Solved Examples 11.5.5 IUPAC nomenclature of other classes – Solved Examples 11.6 Ethanol 11.6.1 Manufacture of ethanol 11.6.2 Physical properties 11.6.3 Chemical properties 11.6.4 Uses of ethanol 11.8 Organic compounds in daily life
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12. Plant Anatomy and Plant Physiology	Introduction 12.1 Tissues 12.2 Tissue system 12.2.1 Dermal or Epidermal tissue system 12.2.2 Ground tissue system 12.2.3 Vascular tissue system 12.3 Internal structure of dicot root (Bean) 12.5 Internal structure of dicot Stem (Sunflower) 12.7 Internal structure of dicot or dorsi-ventral leaf (Mango) 12.9 Plant Physiology 12.9.1 Plastids 12.9.2 Structure of chloroplast 12.9.3 Functions of chloroplast 12.9.4 Photosynthesis 12.9.5 Where does photosynthesis occur? 12.9.6 Photosynthetic pigments 12.9.7 Role of sunlight in photosynthesis 12.9.8 Factors affecting photosynthesis 12.11 Types of respiration 12.11.1 Aerobic respiration (Except Stages) 12.11.2 Anaerobic respiration 12.11.3 Respiratory quotient
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<p>14. Transportation in Plants and Circulation in Animals</p>	<p>Introduction</p> <p>14.1 Means of Transport in Plants</p> <p>14.1.1 Diffusion</p> <p>14.1.2 Active Transport</p> <p>14.1.3 Osmosis</p> <p>14.2 Root hair – water absorbing unit</p> <p>14.3 Pathway of water absorbed by roots</p> <p>14.4 Types of movement of water into the root cells</p> <p>14.4.1 Apoplast Pathway</p> <p>14.4.2 Symplast Pathway</p> <p>14.5 Transpiration</p> <p>14.5.1 Factors affecting transpiration,</p> <p>14.6 Root pressure</p> <p>14.7 Uptake of minerals</p> <p>14.8 Translocation of Mineral Ions</p> <p>14.9 Phloem Transport</p> <p>14.10 Translocation of sugars</p>
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	<p>14.12 Blood</p> <p>14.15 Structure of Human heart</p> <p>14.15.2 Heart Beat</p> <p>14.17 Blood Groups</p>
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<p>16. Plant and Animal Hormones</p>	<p>Introduction</p> <p>16.1 Plant Hormones</p> <p>16.1.1 Auxins (Except Went’s Experiment)</p> <p>16.1.2 Cytokinins</p> <p>16.1.3 Gibberellins</p> <p>16.2 Human Endocrine glands</p> <p>16.2.1 Pituitary Gland</p> <p>16.2.2 Thyroid Gland</p> <p>16.2.4 Pancreas (Islets of Langerhans)</p> <p>16.2.5 Adrenal Gland</p> <p>16.2.6 Reproductive Glands</p> <p>16.2.7 Thymus Gland</p>
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17. Reproduction in Plants and Animals	Introduction
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	17.3.1 Parts of a Typical Flower
	17.3.2 Structure of the Ovule
	17.4 Pollination
	17.4.1 Types of Pollination
	17.6 Fertilization in Plants
	17.7 Sexual reproduction in human
	17.7.1 Male reproductive organ - Structure of Testes
	17.7.2. Female reproductive organ - Structure of Ovary
	17.8 Gametogenesis
	17.8.1 Structure of human Sperm
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	17.9 Menstrual cycle - Process of Ovulation
	17.14 Personal Hygiene
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<p>18. Genetics</p>	<p>Introduction</p> <p>18.1 Gregor Johann Mendel – Father of Genetics</p> <p>18.2 Monohybrid cross-Inheritance of one gene</p> <p>18.3 Dihybrid Cross- Inheritance of two genes and Law of Independent Assortment</p> <p>18.4 Mendel’s laws</p> <p>18.5 Chromosomes, DNA and genes</p> <p>18.5.1 Structure of a Chromosome</p> <p>18.5.4. Karyotype</p> <p>18.6 Structure of DNA</p> <p>18.6.1 Watson and Crick model of DNA</p> <p>18.6.2 DNA Replication</p> <p>18.6.3 Significance of DNA</p> <p>18.7. Sex Determination</p> <p>18.7.1. Sex Determination in Human</p>
<p>19. Origin and Evolution of Life</p>	<p>Introduction</p> <p>19.1 Theories on origin of life</p> <p>19.3 Theories of Evolution</p> <p>19.3.1 Lamarckism</p> <p>19.3.2 Darwinism or Theory of natural selection</p> <p>19.6 Ethnobotany</p>

20. Breeding and Biotechnology	Introduction 20.2 Green Revolution 20.2.4 Plant breeding for improved nutritional quality 20.3 Methods of Plant Breeding for Crop Improvement 20.3.1 Introduction of new varieties of plants 20.3.2 Selection 20.3.3 Polyploidy Breeding 20.3.4 Mutation Breeding 20.3.5 Hybradisation 20.4 Animal Breeding 20.4.1 Inbreeding 20.4.2 Outbreeding 20.4.3 Heterosis 20.6 Biotechnology in Medicine
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21. Health and Diseases	Introduction 21.1 Abuse and types of abuse 21.1.1 Child Abuse 21.1.2 Sexual Abuse 21.1.3 Child Sexual Abuse 21.1.4 Approaches for protection of an abused child 21.2 Drug and tobacco abuse 21.3 Drug abuse 21.3.1 Types of Drug 21.3.2 Drug dependence 21.3.3 Behavioural changes of drug users 21.3.4 Drug De-addiction 21.4 Tobacco abuse 21.4.1 Tobacco Use 21.4.2 Smoking Hazards and effects of Tobacco 21.4.3 Prevention of smoking 21.5 Alcohol abuse 21.5.1 Harmful effects of alcohol to health 21.6 Rehabilitation measures for alcoholics 21.9 Obesity 21.9.1 Prevention and control of obesity 21.11 Cancer 21.11.1 Types of Cancer 21.11.2 Carcinogenic agents 21.11.3 Treatment of Cancer 21.11.4 Preventive measures for cancer 21.12 AIDS 21.12.1 Transmission of HIV
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<p>22. Environmental Management</p>	<p>Introduction</p> <p>22.1 Conservation and judicious use of Resources</p> <p>22.5 Renewable and non-renewable Energy Resources</p> <p>22.5.1 Fossil Fuels</p> <p>22.5.2 Coal and Petroleum</p> <p>22.5.3 Steps to conserve coal and petroleum resources</p> <p>22.6 Non-Conventional (Alternative) Energy Resources</p> <p>22.6.3 Shale gas</p> <p>22.6.5 Water energy</p> <p>22.6.6 Tidal energy</p> <p>22.7 Rainwater Harvesting</p> <p>22.8. Electrical Energy Management</p> <p>22.9 E-Waste and its management</p>
<p>Practical</p>	<p>2. Determination of focal length of a convex lens</p> <p>3. Determination of resistivity</p> <p>4. Identification of exothermic and endothermic reactions</p> <p>5. Testing the solubility of salt</p> <p>8. Photosynthesis</p> <p>10. Mendel's monohybrid cross</p> <p>13. Identification of blood cells</p>