

Biology

- Diffusion & Osmosis
- Hierarchical organization
- Organelles
 - structure, function, type of cell
- Cell cycle & stages of mitosis
 - explain & identify
- Cancer in relation to cell cycle
- Stem cells & differentiation
- Tissues
 - 4 main types, structures & functions
- Organ systems:
 - main functions & organs
 - **Digestive** – nutrient & water absorption, accessory organs
 - **Respiratory** – pathway of air in & out of lungs, details of gas exchange
 - **Circulatory** – arteries & veins, blood, circulation
 - **Interactions** between systems (specific locations/ anatomy)
- Plant: main tissues & organ systems

Optics

- Production of light
- Properties of light
- Reflection
 - Law of reflection – normal, angle of incidence, angle of reflection, how to measure angles
 - Plane & curved (convex & concave) mirrors - Image **characteristics (SALT), calculate, locate & draw** images
- Refraction
 - Describe light passing through different media – speed, direction change
 - Index of refraction – **trends & calculate**
 - Angle of incidence, angle of refraction, critical angle
 - Lenses (diverging & converging)- Image **characteristics (SALT), calculate, locate & draw** images

Formulas will NOT be provided

$$n = c/v$$

$$m = \frac{hi}{ho} = - \frac{di}{do}$$

$$\frac{1}{f} = \frac{1}{di} + \frac{1}{do}$$

Chemistry

- Atoms
 - Atomic structure & subatomic particles
 - Ions – how/why they form
 - Counting atoms & elements in compounds
- Periodic table patterns
- Bonding – naming, formulas, properties
 - Ionic compounds
 - Covalent compounds (molecules)
 - Acids & bases
- Chemical equations – write & balance
- Types of reactions – **identify & balance**
- Law of conservation of mass
- Acids – properties & characteristics
- Bases - properties & characteristics
- pH scale
- Neutralization reactions

Climate Change

- Greenhouse gases & sources
- Greenhouse effect
- Recording atmospheric conditions

Key Topics

| Biology | Optics | Chemistry |
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| Anaphase Alveoli/alveolus Artery Cancer Capillary Carcinogen Cell cycle Cell membrane Cell wall Cellular Differentiation Centriole Centromere Chloroplast Chromosome Connective Tissue Cytokinesis Cytoplasm DNA Endoplasmic Reticulum Epithelial Tissue Eukaryote Golgi Apparatus Interphase Meristematic Cell Metaphase Metastasis Mitochondria Mitosis Muscle Tissue Mutation Nerve Tissue Nucleus Organ Organelle Organ System Phloem Prokaryote Prophase Ribosome Sister chromatids Specialized Cell Spindle fiber Stem Cell Tissue Telophase Vacuole Vein Xylem | Angle of Incidence (θ_i) Angle of Reflection (θ_r) Angle of Refraction (θ_R) Attitude Bioluminescence Centre of Curvature (C) Chimiluminescence Concave Converging Convex Critical Angle (θ_c) Diffuse Reflection Diverging Electromagnetic Spectrum Fluorescence Focus (F) / Focal point Image Incandescence Incident Ray Index of Refraction (n) Lateral Inversion Light-Emitting Diode (LED) Location of image Luminous Medium Mirror Non-Luminous Normal Object Optical Centre (O) Phosphorescence Plane Principal Axis (PA) Principal Focus (F) Real Image Reflected Ray Reflection Refracted Ray Refraction Secondary Focus (F') Total Internal Reflection Triboluminescence Type of image Virtual Image Visible Light Visible Spectrum | Acid Anion Atom Atomic number Base Cation Chemical Change Chemical Equation Chemical Property Coefficient Combustion Compound Covalent Bond Decomposition Diatomic Molecule Double Displacement Electron Element Group Halogens Indicator Ion Ionic Bond Ionic Charge Ionic Compound Law of Conservation of Mass Molecular Compound Molecule Neutralization Neutron Noble Gases Period Periodic Table pH Scale Physical Change Physical Property Polyatomic Ion Product Proton Reactant Single Displacement Synthesis Reaction Valence electrons Valence Shell Word Equation |

Key Terms: NOT an inclusive list of terms