

LEVEL 12 PHYSICAL SCIENCE (Basic Physics and Chemistry)

1109 Foundations of Physical science; Definition and limitation of science; Science and scripture: The scientific method; Scientific measurement: Fundamental and derived units; conversion; powers of ten notation, scientific notation, significant figures

1110 The Composition of Matter; Introduction: Two views of chemistry; chemistry and you; phases and classification of matter; homogenous substances: Elements; compounds; solutions; Heterogeneous substances: Mixtures; colloids; atomic models and structure

1111 Gas laws; Nature of gases: Air and atmospheric pressure; properties of gases, kinetic theory of gases: pressure and density of gases; Gas Laws: Boyle's law; Charles' law; Gay Lussac's law; combined gas law; Focus on Robert Boyle

1112 The Chemical structure of matter; Formation of chemical compounds: Bonding; electron structure; valence, ionic charges and radicals; chemical formulas and equations; chemical reactions; acids and bases; conservation of matter and definite proportions; structural design: Elemental periods and families

1113 Metals and Metalloids; Chemical and physical properties of metals; Alkali metals: Lithium; sodium; potassium; rubidium and cesium; francium; Alkaline-earth metals: Beryllium; magnesium; calcium; strontium, barium and radium; transition metals; Aluminium and metalloids; Chemical and physical metallurgy

1114 Nonmetallic elements; Water and its elements: Physical and chemical properties of water; reactions with water; Hydrogen; Oxygen; Group VA elements: Nitrogen; Phosphorus; Group VIA elements: Selenium, Sulphur; Halogens; Rare gases

1115 Organic chemistry; Carbon and its compounds: Diamond; graphite; amorphous carbon; Organic compounds; Hydrocarbons; alcohols; aldehydes; carboxylic acids; biochemical compounds: Carbohydrates; lipids; amino acids and proteins

1116 Laws of motion and gravitation; Laws of motion: First, second and third laws of motion; momentum; Gravity: Law of universal gravitation; universal gravitational constant relationship of mass and weight; focus on Isaac Newton; Energy: Energy; work; power; forms, transformation and conservation of energy; simple machines and mechanical advantage

1117 Sound Wave motion; properties of wave motion; reflection; refraction; diffraction; interference; Sound Waves: Nature and speed of sound; pitch; intensity; reflection, refraction, and diffraction of sound waves; resonance; Doppler effect

1118 Light, optics and the Electromagnetic Spectrum; Light: Nature of light; visible spectrum; velocity of light; Optics: Reflection; mirrors; refraction; lenses; polarization; Electromagnetic spectrum; Magnetism; Force of Magnetism; Magnetic substances, domains and fields

1119 Electricity: Electrostatics; Current electricity; Electric circuits; Electronics and computers

1120 Modern Physics: Nuclear radiation; Radioactive decay; Fission and fusion reactions; Physics of the 21st century; Space exploration