Combined Science Higher

Biology Paper 1

Cell Biology:

Cells
Microscopy
Cell differentiation and specialisation
Chromosomes and mitosis
Stem cells
Diffusion
Osmosis
Active transport
Exchange surfaces
Exchange substances

Organisation

Cell organisation
Enzymes and enzymatic reactions
Enzymes and digestion
Food tests
Lungs
The heart
Blood vessels
Blood
Cardiovascular disease
Health and disease
Risk factors for non-communicable diseases
Cancer
Plant cell organisation
Transpiration and translocation
Transpiration and stomata

Infection and response

Communicable diseases
Viral, fungal and protest diseases
Bacterial disease and prevention
Fighting disease
Fighting diseases - vaccination
Fighting diseases - Dugs
Developing drugs

Bioenergetics

Photosynthesis and limiting factors
The rate of photosynthesis
Respiration and metabolism
Aerobic and anaerobic respiration
Exercise

Biology Paper 2

Homeostasis and Response

Homeostasis
The nervous system
Synapses and reflexes
Investigating reaction time
Endocrine system
Controlling blood glucose (foundation-name of the hormone, role and where its produced)
Puberty and the menstrual cycle
Controlling fertility
Adrenaline and Thyroxine

Inheritance, Variation and Evolution

DNA
Reproduction
Meiosis
X and Y chromosome
Genetic diagrams
Inherited disorders, family trees and embryo screening
Variation
Evolution
Selective Breeding
Genetic engineering
Fossils
Antibiotic resistance
Classification

Ecology

Competition
Abiotic and Biotic factors
Food chains
Using quadrats
Using transects
Water cycle
Carbon cycle
Biodiversity and waste management
Global warming
Deforestation and land
Maintaining ecosystems and biodiversity

Chemistry Paper 1

Atomic structure and the periodic table:

Atoms
Elements
Compounds
Chemical Equations
Mixtures and chromatography
More separation techniques
Distillation
History of the atom
Electronic structure
Development of the periodic table
The modern periodic table
Metals and non-metals
Group 1 elements
Group 7 elements
Group 0 elements

Bonding, Structure and Properties of matter

Formation of ions
Ionic bonding
Ionic compounds
Covalent bonding
Simple molecular substances
Polymers and giant covalent structures
Allotropes of carbons
Metallic bonding
States of matter
Changing states

Quantitative Chemistry

Relative formula mass
The mole
Conservation of mass
The mole equation
Limiting reactants
Concentrations of solutions

Chemical Changes

Acids and Bases
Strong Acids and Weak Acids
Reactions of acids
The reactivity series
Extracting metals
Separating metals from metal oxides
Redox reactions
Electrolysis
Electrolysis of aqueous solutions

Energy Changes

Energy Changes
Exothermic and endothermic reactions
Measuring energy changes
Reaction profiles
Bond Energies

Chemistry Paper 2

The Rate and Extent of chemical changes

Rates of reactions
Factors affecting rates of reactions
Measuring rates of reactions
Two rates experiments
Finding reaction rates from graphs
Reversible reactions
Le cChateliier's principle

Organic Chemistry

Hydrocarbons
Crude oil
Fractional distillation
Uses and cracking of crude oil

Chemical Analysis

Purity and Formulations
Paper Chromatography
Using Chromatograms
Test for gases

Chemistry of the Atmosphere

The evolution of the Atmosphere
Greenhouse gases and Climate Change
Carbon Footprints
Air Pollution

Using Resources

Finite and renewable Resources
Reuse and Recycling
Using Life Cycle Assessment
Potable Water
Desalination
Waste Water Treatment

Physics Paper 1

Energy

Energy stores and systems
Kinetic and potential energy stores
Specific heat capacity
Conservation of energy and power
Reducing unwanted energy transfers
Efficiency
Energy resources and their uses
Wind, solar and geothermal
Hydroelectricity, waves and tides
Bio-fuels and non-renewables
Trends in energy resource use

Electricity

Current and circuit symbols
Resistance and V=IR
Resistance and I-V characteristics
Circuit devices
Series circuit
Parallel circuit
Investigating resistance
Electricity in the home
Power of electrical appliances
More on Power
The national grid

Particle Model of Matter

The particle model and motion in gases
Density
Internal energy and changes of state
Specific latent heat

Atomic Structure

Developing the model of the atom
Isotopes and nuclear radiation
Nuclear equations
Half-life
Irradiation and contamination

Physics Paper 2

Forces

Contact and Non-Contact Forces
Weight, mass and Gravity
Resultant Forces and Work Done
Forces and Elasticity
Investigating Springs
Distance, Displacement, speed and velocity
Acceleration
Distance-Time Graphs

Waves

Transverse and Longitudinal waves
Frequency, Period and Wave Speed
Investigating Waves
Refraction
Electromagnetic Waves
Uses of Electromagnetic waves
More uses of Electromagnetic Waves
Investigating Infrared Waves
Investigating Infrared Absorption
Dangers of Electromagnetic Waves

Magnetism and Electromagnetism

Permanent and Induced Magnets
Electromagnetism