



	Throughout the key stage the following topics are covered					
PAPER 1	Topic: B1 Cell Biology Using microscopes Animal and plant cells Diffusion Osmosis Cell Division Growth and differentiation Stem cells Topic: B2 Organisation Tissues and organs Chemistry of food Human digestive system Catalysts and enzymes Heart and blood vessels Breathing and gas exchange Organ systems in plants Exchange of materials using transport systems in plants Topic: B3 Infection and Response Health and disease Pathogens and disease Bacterial growth (T) Preventing infections Viral diseases Bacterial diseases Human defence responses Plant diseases (T) Vaccination Antibiotics & painkillers	Discovering drugs Developing drugs Making monoclonal antibodies (T) Use of monoclonal antibodies (T) Cancer Smoking and the risk of disease Diet, exercise and disease Alcohol and other carcinogens Topic: B4 Bioenergetics Photosynthesis Rate of photosynthesis How plants use glucose Making the most of photosynthesis Aerobic respiration The response to exercise Anaerobic respiration Metabolism and the liver	Topic: C1 Atomic Structure Chemical equations Separating mixtures Structure of the atom Ions and isotopes History of the periodic table Electronic structure Group 1 - Alkali Metals Group 7 – Halogens Topic: C2 Structure and Bonding Ionic Bonding Covalent bonding Ionic and covalent compounds Fullerenes and graphite Topic: C3 Chemical calculations Relative formula mass and moles Mass calculations and balanced equations Titration and titration calculations(T) Volumes of gases (T)	Topic: C4 Chemical changes Reactivity series Displacement reactions Extracting metals Salts from metals Making salts Acids/pH scale Introduction to electrolysis Changes at the electrodes The extraction of aluminium Electrolysis of aqueous solutions Topic: C5 Energy changes Exothermic/endothermic reactions Energy profile diagrams Bond energy calculation Chemical cell, batteries and fuel cells (T)	Topic: P1 Energy Energy stores Energy and Work Gravitational Potential Energy Kinetic energy Energy and Power Conduction, convection and infrared radiation Specific heat capacity Energy from Renewable resources Energy issues Topic: P2 Electricity Electric current, potential difference and resistance Series and parallel circuits Alternating current Electrical appliances and power Energy transfer and currents	Topic: P3 Particle model of matter Density States of matter Changing state Specific latent heat Internal energy Topic: P4 Atomic Structure Atoms and radiation Discovery and changes in the nucleus Alpha, beta and gamma radiation Activity and half life Nuclear radiation in medicine(T) Nuclear fission/fusion(T) Nuclear issues (T)
PAPER 2	Topic: B5 Homeostasis and Response Principles of homeostasis Structure & function of the nervous system Reflex actions The brain (T) The eye (T) Principles of hormonal control Control of blood glucose levels Treating diabetes Human reproduction Hormones & the menstrual cycle Artificial control of fertility Plant hormones (T) Controlling body temperature (T) Removing waste products (T)	Topic: B6 Evolution by natural selection Selective breeding Genetic engineering Extinction Antibiotic resistance bacteria Classification Topic: B7 Ecology The importance of communities Organisms in their environment Distribution and abundance Competition in plants and animals Adapt and survive Adaptation in plants and animals	Topic: C6 Rates and equilibrium Effect of temperature, concentration, surface area and catalyst Reversible reactions Dynamic equilibrium Altering conditions Topic: 7 Organic Chemistry Hydrocarbons Fractional distillation Combustion Cracking hydrocarbons Reactions of alkenes (T) Structures of alcohols, carboxylic acids & esters (T) Reactions and uses of alcohols (T)	Topic: C9 The Earth's atmosphere History of our atmosphere Our evolving atmosphere Greenhouse gases Global climate change Atmospheric pollutants Topic: C10 Using resources Finite and renewable resources Water safe to drink Treating waste water Extracting metals from ores Life cycle assessments Reduce, reuse, recycle Rusting Alloys	Topic: P5 Forces Vectors & scalars Forces between objects Resultant forces Moments at work (T) Centre of mass Moments & equilibrium (T) Parallelogram of forces Resolution of forces Distance time graphs Velocity time graphs Acceleration Stopping distances Force and acceleration Weight & terminal velocity Forces & braking Momentum	Topic: P6 Waves The nature and properties of waves Reflection and refraction The electromagnetic spectrum Light, infrared, microwaves and radio waves Communications UV waves, x-rays, and gamma rays X-rays in medicine Reflection of light (T) Refraction of light (T) Light & colour (T) Lenses (T) Topic: P7 Electromagnetism Magnetic fields of electric currents

	The human kidney (T) Kidney transplants (T) Topic: B6 Inheritance, Variation and Evolution Types of reproduction Cell division in reproduction DNA & the genome DNA structure & protein synthesis (T) Gene expression & mutation (T) Inheritance in action More about genetics Inherited disorders	Feeding relationships Materials recycling The carbon cycle The human population explosion Air, land and water pollution Deforestation and peat destruction Global warming Maintaining biodiversity	Carboxylic acids and esters (T) Addition polymerisation (T) Condensation polymerisation (T) Natural polymers (T) DNA (T) Topic: C8 Chemical analysis Pure substances and mixtures Analysing chromatograms Testing for gases	Composites The Haber process	Using the conservation of momentum (T) Impact forces (T) Forces & elasticity Pressure & surfaces (T) Pressure in a liquid at rest (T) Atmospheric pressure (T) Upthrust & floatation (T)	The motor effect Electromagnets in devices (T) The generator effect (T) The AC generator (T) Transformers (T) Topic: P8 Space (T) Formation of the Solar System (T) Life history of a star (T) Planets, satellites & orbits (T) The expanding universe (T) The beginning and end of the universe (T)
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