

Science Paper 1 RAG Rating – Separate Sciences (Triple) – HIGHER TIER

Codes refer to Kerboodle Science for Trilogy

Biology	Chemistry	Physics
B1 – Cell Structure and Transport • Microscopes and magnification • Animal, plant and bacterial cells • Specialised eukaryotic cells • Diffusion, osmosis and active transport B2 – Cell Division • Mitosis and growth • Stem cells and their use B3 – Organisation and the Digestive System • Tissues and organs • The digestive system and food tests • Enzymes and factors that affect their activity B4 – Organising Animals and Plants • Blood and blood vessels • Structure of the heart, valve replacement and artificial hearts • Breathing and gas exchange • Plant tissues, transport and transpiration in plants B5 – Communicable Diseases • Health, disease and pathogens; defences of the body • <i>Growing bacteria a lab (aseptic technique)</i> • Examples of viral/bacterial/fungal diseases in animals/plants • <i>Plant diseases and defences</i> B6 – Preventing and Treating Disease • Vaccination; antibiotics; painkillers • Discovering new drugs and drugs trials • <i>Making and using monoclonal antibodies</i> B7 – Non-Communicable Diseases • Cancer • Risks of smoking, poor diet, lack of exercise and alcohol B8 – Photosynthesis • Photosynthesis equation and how it works in plants • Experiments to show photosynthesis or its rate • Effects of CO₂, temperature and light intensity on rate • How plants use glucose B9 – Respiration • Aerobic respiration • Effects of exercise • Anaerobic respiration • Role of the liver and metabolism	C1 – Atomic Structure • Atoms and ions • Sub-atomic particles, electron configuration, isotopes • Separating mixtures, including simple fractional distillation and paper chromatography • History of the development of the atomic model C2 – The Periodic Table • History of the development of the Periodic Table • Chemical and physical properties of Groups 1 (Alkali Metals) and 7 (Halogens) • Trends in the Periodic Table • <i>Transition metals</i> C3 – Structure and Bonding • Particles and states of matter • Ionic substances and ionic bonding • Covalent substances and covalent bonding • Simple and giant covalent structures • Forms of carbon • Metals, alloys and metallic bonding • <i>Nanoparticles and their applications</i> C4 – Chemical Calculations • Calculating relative formula masses, reacting masses and moles • Using masses to balance equations • <i>Yield and atom economy</i> • Expressing concentration of solutions • <i>Titrations and calculations</i> • <i>Volume of gases</i> C5 – Chemical Changes • Reactivity series • Displacement reactions • Ionic equations; half equations • Reactions of metals with oxygen, water, acids • Reactions of soluble and insoluble bases with acids • pH scale and indicators • Strong and weak acids C6 – Electrolysis • Electrolysis of molten ionic compounds or aqueous solutions • Prediction of products at each electrode • Extraction of aluminium C7 – Energy Changes • Describing exothermic and endothermic reactions • Uses of exo and endothermic reactions • Reaction profile diagrams • Bond energy calculations • <i>Cells, batteries and fuel cells</i>	P1 – Conservation and Dissipation of Energy • Energy stores and transfers; conservation of energy • Energy transfer and work done • Calculations of gravitational potential energy changes, kinetic and elastic energy P2 – Energy Transfer by Heating • Energy transfer by conduction • <i>Infrared radiation</i> • Specific heat capacity • Heating and insulating buildings P3 – Energy Resources • Demand and supply of energy • Non-renewable energy sources (fossil fuel and nuclear power stations) • Renewable energy sources and electricity generation • Energy generation and the environment P4 – Electric Circuits • Static electricity • Current and charge • Potential difference and resistance • Components • Series and parallel circuits P5 – Electricity in the Home • Direct and alternating current • Cables and plugs • Electrical power • Appliances and efficiency P6 – Molecules and Matter • Density • Describing arrangement and behaviour of particles in solids/liquids/gas • Changes of state • Internal energy • Specific latent heat • Gas pressure and temperature • <i>Gas pressure and volume</i> P7 – Radioactivity • Atoms and radiation • Discovery of the nucleus • Alpha, beta and gamma radiation – different characteristics, hazards and uses • Activity and half-life • <i>Nuclear radiation in medicine</i> • <i>Nuclear fission and nuclear fusion</i> • <i>Background radiation; risks & safety; nuclear waste</i>