

## Year 11 Advance Information Combined Science Foundation

### Biology Paper 1

For this paper, the following list shows the major focus of the content of the exam:

- 4.1.2 Cell division
- 4.2.2 Animal tissues, organs and organ systems
- 4.3.1 Communicable diseases
- 4.4.1 Photosynthesis

#### **Required practical activities that will be assessed:**

- Required practical activity 1: use of a light microscope.
- Required practical activity 3: use qualitative reagents to test for a range of carbohydrates, lipids and proteins.
- Required practical activity 5: investigate the effect of light on the rate of photosynthesis of an aquatic plant such as pondweed.

#### **Topics not assessed in this paper:**

- 4.1.3.2 Osmosis
- 4.1.3.3 Active transport
- 4.2.2.4 Coronary heart disease: a non-communicable disease
- 4.4.1.3 Uses of glucose from photosynthesis
- 4.4.2 Respiration

### Biology Paper 2

For this paper, the following list shows the major focus of the content of the exam:

- 4.5.3 Hormonal control in humans
- 4.6.1 Reproduction
- 4.7.1 Adaptations, interdependence and competition
- 4.7.2 Organisation of an ecosystem

#### **Required practical activity that will be assessed:**

- Required practical activity 7: measure the population size of a common species in a habitat. Use sampling techniques to investigate the effect of a factor on the distribution of this species.

#### **Topics not assessed in this paper:**

- 4.5.2 The human nervous system
- 4.5.3.3 Hormones in human reproduction
- 4.5.3.4 Contraception
- 4.6.1.1 Sexual and asexual reproduction
- 4.6.1.2 Meiosis
- 4.6.1.6 Sex determination
- 4.6.2.1 Variation
- 4.6.2.2 Evolution
- 4.6.2.3 Selective breeding
- 4.6.3.3 Extinction
- 4.6.3.4 Resistant bacteria
- 4.7.1.4 Adaptations
- 4.7.3.1 Biodiversity
- 4.7.3.3 Land use
- 4.7.3.4 Deforestation
- 4.7.3.5 Global warming
- 4.7.3.6 Maintaining biodiversity

## Paper Chemistry 1

**For this paper, the following list shows the major focus of the content of the exam:**

- 5.1.2 The periodic table
- 5.2.2 How bonding and structure are related to the properties of substances
- 5.2.3 Structure and bonding of carbon
- 5.4.1 Reactivity of metals
- 5.4.2 Reactions of acids
- 5.4.3 Electrolysis

**Required practical activities that will be assessed:**

- Required practical activity 8: preparation of a pure, dry sample of a soluble salt from an insoluble oxide or carbonate, using a Bunsen burner to heat dilute acid and a water bath or electric heater to evaporate the solution.
- Required practical activity 9: investigate what happens when aqueous solutions are electrolysed using inert electrodes. This should be an investigation involving developing a hypothesis.
- Required practical activity 10: investigate the variables that affect temperature changes in reacting solutions such as, eg, acid plus metals, acid plus carbonates, neutralisations, displacement of metals.

**Topics not assessed in this paper:**

- Not applicable

## Chemistry Paper 2

**For this paper, the following list shows the major focus of the content of the exam:**

- 5.6.1 Rate of reaction
- 5.6.2 Reversible reactions and dynamic equilibrium
- 5.7.1 Carbon compounds as fuels and feedstock
- 5.8.1 Purity, formulations and chromatography
- 5.9.1 The composition and evolution of the Earth's atmosphere
- 5.9.3 Common atmospheric pollutants and their sources
- 5.10.1 Using the Earth's resources and obtaining potable water

**Required practical activities that will be assessed:**

- Required practical activity 11: investigate how changes in concentration affect the rates of reactions by a method involving measuring the volume of a gas produced and a method involving a change in colour or turbidity. This should be an investigation involving developing a hypothesis.
- Required practical activity 12: investigate how paper chromatography can be used to separate and tell the difference between coloured substances. Students should calculate R<sub>f</sub> values.

**Topic not assessed in this paper:**

- 5.9.2 Carbon dioxide and methane as greenhouse gases

## **Physics Paper 1**

**For this paper, the following list shows the major focus of the content of the exam:**

- 6.1.1 Energy changes in a system, and the ways energy is stored before and after such changes
- 6.1.3 National and global energy resources
- 6.2.1 Current, potential difference and resistance
- 6.3.1 Changes of state and the particle model
- 6.4.2 Atoms and nuclear radiation

**Required practical activities that will be assessed:**

- Required practical activity 14: an investigation to determine the specific heat capacity of one or more materials. The investigation will involve linking the decrease of one energy store (or work done) to the increase in temperature and subsequent increase in thermal energy stored.
- Required practical activity 16: use circuit diagrams to construct appropriate circuits to investigate the I–V characteristics of a variety of circuit elements, including a filament lamp, a diode and a resistor at constant temperature.

**Topics not assessed in this paper:**

- 6.2.3 Domestic uses and safety
- 6.3.3 Particle model and pressure
- 6.4.1 Atoms and isotopes

## **Physics Paper 2**

**For this paper, the following list shows the major focus of the content of the exam:**

- 6.5.1 Forces and their interactions
- 6.5.4.1 Describing motion along a line
- 6.5.4.2 Forces, accelerations and Newton's Laws of motion
- 6.5.4.3 Forces and braking
- 6.6.2 Electromagnetic waves
- 6.7.1 Permanent and induced magnetism, magnetic forces and fields
- 6.7.2 The motor effect

**Required practical activity that will be assessed:**

- Required practical activity 21: investigate how the amount of infrared radiation absorbed or radiated by a surface depends on the nature of that surface.

**Topic not assessed in this paper:**

- 6.5.3 Forces and elasticity