

YEAR 8 SUMMER 2024 MARK SCHEME

Section 1 Organisms: Breathing and digestion

Q1. a. B [1]

b. Carbon dioxide [1]

Do not accept CO₂

c. To easily allow gas exchange [1]

d. Nicotine [1]

Total for this section: 4 marks

Section 2 Origins: Evolution and inheritance

Q2. a. Nucleus [1]

b. One mark for each of the following: **Maximum 4 marks**

Suitable (even) scale starting at zero on the y axis [1]

X and Y axis labelled correctly (X = Name of animal, Y = Number of chromosomes [1]

3 bars plotted correctly (within ½ mm) [1]

OR All bars plotted correctly [2]

Q3. a. Fossils show change over time [1]

b. *Any two from:* Meteorite/ asteroid impact, Volcanic activity, New predators, New diseases, Competition for food, Competition for mates, Lack of habitat, Climate change/ Temperature change [2]

Total for this section: 8 marks

Section 3 Cycles and interactions: Photosynthesis and respiration

Q4. a. Colour of light [1]

b. Number of floating discs after 10 minutes [1]

c. Carbon dioxide + Water → Oxygen + Glucose [1]

d. Chlorophyll [1]

Q5. a. Heart rate increases [1]

Deeper/ heavier breathing [1]

b. Oxygen [1]

Lactic acid [1]

In this order only

Total for this section: 8 marks

Section 4: Elements and the periodic table

Q6.a.

Element	Symbol	Relative number of atoms in CaCO ₃
Calcium		1
Carbon	C	
	O	3

*Award 1 mark for each correct row, **maximum 3 marks***

b. It is a compound/ it is not an element [1]

Total for this section: 4 marks

Section 5: Chemical energy and types of reaction

Q7. a. H₂O [1]

CO₂ [1]

Do not accept water or carbon dioxide

b. Award mark for any sensible safety precaution [1]

e.g. Wear goggles/Stand up while working.

Q8. a. Thermometer [1]

b. -10 [1]

c. Endothermic [1]

d. B [1]

Biggest decrease in temperature [1]

Total for this section: 8 marks

Section 6 Earth and beyond: Climate and Earth resources

Q9. a. Air → Mixture [1]

Carbon dioxide → Compound [1]

Argon → Element [1]

b. 78% [1]

Q10. a. Photosynthesis [1]

b. Methane [1]

c. Any two from: Plant more trees/ Reduce use of fossil fuels/ Burn less fossil fuels/ Use more renewable energy resources [2]

Maximum 2 marks

Total for this section: 8 marks

Section 7 Electricity and Magnetism: Electricity

Q11. Battery [1]

Bulb [1]

In this order only

Q12. A. = $(4.1+4.0+4.2) / 3$ [1]

= 4.1 [1]

b. As the length of wire increases, the resistance increases [1]

Accept opposite, as the length of wire decreases the resistance decreases.

c. = $2.1 / 0.3$

= 7 [1]

d. Volts [1]

Total for this section: 8 marks

Section 8 Energy: Work, heating and cooling

Q13. a. When marking this question, you must first give the students a level of response. Once this is decided a mark within that level is awarded. The indicative content is a list of possible answers that could be included is not a exhaustive list students may include other relevant Scientific knowledge. The indicative content should not be used as a list of marking points to award a mark out of 6.

Level of answer	Level descriptor	Marks available
Level 3	The method would lead to the production of a valid outcome. The key steps are identified and logically sequenced.	5 – 6 marks
Level 2	The method would not necessarily lead to a valid outcome. Most steps are identified, but the method is not fully logically sequenced.	3 – 4 marks
Level 1	The method would not lead to a valid outcome. Some relevant steps are identified, but links are not made clear.	1 – 2 marks

Indicative content:

Independent variable – Insulating material (cotton wool, black paper, white paper)

Dependent variable – Temperature change of water

Control variable – Volume of hot water, starting temperature of the water, time, thickness of insulating material.

- Wrap the beaker in cotton wool.
- Pour in 200ml of hot water.
- Use a thermometer to measure the start temperature.
- Use a stopwatch to time 5 minutes.
- Use a thermometer to measure the end temperature.
- Work out the temperature difference.
- Repeat for black paper and white paper.
- Repeat each insulating material three times.

b. More precise [1]

Q14. a. (In convection) heat is transferred by particles moving [1]

Particles can only move freely in liquids and gases [1]

OR Particles are not free to move in solids.

Q15. a. Potential [1]

b. $= 660 \times 25$ [1]

$= 16,500$ [1]

Total for this section: 12 marks

[END OF QUESTIONS]