

Year 9 December assessment 2022

Section 1 – Organisms (cells and organisation)

Q1. a. C [1]

b. D [1]

c. They are too big. [1]

d. Biuret reagent [1]

e. Lilac [1]

Q2. a. Stopwatch [1]

b. pH (of the solution) [1]

c. Time (when no starch was detected) [1]

d. Repeat the investigation [1]

Q3. b. **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. [Maximum of 6 marks]**

0	No relevant content
Level 1 (1-2 marks)	States one structure and correctly links this to the function for 1 of the specialised cells. 2 nd / 3 rd cells are not mentioned or structure/ function is incorrect.
Level 2 (3-4 marks)	States (at least) one structure and correctly links this to the function for 2 of the specialised cells. 3 rd cell is not mentioned or structure/ function is incorrect.
Level 3 (5-6 marks)	For all 3 specialised cells, states (at least) one structure and correctly links this to the function.

Examples of points made in the response:

- The sperm cell has a tail to swim to the egg (to fertilise it)
- The head of the sperm has enzymes to penetrate the egg.
- The nerve cell is long and thin (axon) so they can carry messages quickly.
- The nerve cell has branched connections at each end to pass electrical signals to other nerve cells.
- A root hair cell has a large surface area to absorb more water (from the soil).
- A root hair cell contains no chloroplasts as they are underground so do not need to photosynthesise.

Q4.a. White blood cell → Destroy microorganisms [1]

Red blood cell → Carry oxygen around the body [1]

Platelets → Help blood to clot [1]

b. Muscle/ Muscular [1]

c. Ventricle [1]

Total for this section: 20 marks

Section 2 – Matter (atomic structure and the periodic table)

Q5. a. Element [1]

b. Compound [1]

c. Mixture [1]

Q6. a. Hydrogen [1]

b. C [1]

c. B [1]

d. Atomic weight [1]

e. Left gaps [1]

Q7. a. Alkali metals [1]

b. Number of electrons = 3 [1]

Number of neutrons = 4 [1]

Number of protons = 3 [1]

c. $1 \times 10^{-10}\text{m}$ [1]

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

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

X and Y axis labelled correctly (X = Group 1 element, Y = Melting point/ °C [1]

2/3 bars plotted correctly (within 1/2 mm) [1]

OR

All bars plotted correctly [2]

Q8. a. Conical flask [1]

b. Distillation [1]

c. Sensible safety precaution suggested. E.g. Wear goggles, tie long hair back. [1]

Total for this section: 20 marks

Section 3 – Energy

Q9. a. Thermometer/ temperature probe [1]

b. To prevent (frost/cold) burns [1]

c. $= 0.00320 \times 1250 \times 215$ [1]

$= 860$ [1]

d. Kinetic [1]

Q10. a. The brightness of the lamp [1]

b. C [1]

c. 12.5 [1]

d. $= 0.96 / 8$ [1]

$= 0.12$ or 12% [1]

e. Any two from the following: *[Maximum 2 marks]*

Wind, Tidal, Geothermal, Hydroelectric, Wave, Biomass,

f. Replenished [1]

g. It is predictable [1]

Q11. a. $= 45 \times 9.8 \times 1.8$ [1]

793.8 (J) [1]

b. $= 0.5 \times 45 \times (4)^2$ [1]

$= 360$ (J) [1]

c. Some of the energy is wasted [1]

d. Lubricate the wheels/ Put oil on them [1]

Total for this section: 20 marks