

# Combined Science Paper 2 – Model Answers (ZIMSEC June 2025)

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## Section A: Answer All Questions

1(a) Two functions of water in the body:

- Regulates body temperature
- Acts as a solvent for chemical reactions

1(b) Male builder uses more energy than office worker due to higher physical activity levels.

1(c) One dietary consideration: Age, activity level, gender, or health conditions.

1(d) Effects of malnutrition:

- Stunted growth
- Weak immune system

2(a) Epididymis stores and matures sperms.

2(b) Sperm duct (vas deferens).

2(c) Testes:

- Produce sperm
- Produce testosterone

2(d) Seminal vesicles (or prostate gland).

2(e) Gonorrhoea causes inflammation/blockage of epididymis, may cause infertility.

3(a) Table of subatomic particles:

Electron – Position: outside nucleus, Mass:  $1/1840$ , Charge:  $-1$

Neutron – Position: nucleus, Mass: 1, Charge: 0

Proton – Position: nucleus, Mass: 1, Charge:  $+1$

3(b)(i) Neutrons in B =  $18 - 8 = 10$

3(b)(ii) Electron configuration of A = 2.6

3(b)(iii) Name for A and B: Isotopes

4(a) Electrolysis is chemical decomposition using electric current.

4(b) Gas M is Hydrogen.

4(c) Electrodes: Platinum or graphite.

4(d) Water is acidified to improve conductivity.

4(e) Cathode reaction:  $2\text{H}^+ + 2\text{e}^- \rightarrow \text{H}_2$

5(a)(i) A = Float chamber, B = Jet/nozzle

5(a)(ii) Blockage at B reduces fuel flow to engine, causing poor performance.

6(a) Intake stroke: air-fuel enters, Exhaust: burnt gases expelled.

6(b) Modern engines: More efficient, less pollution.

6(c) Instruments: Voltmeter, Ammeter

6(d)  $V = IR = 0.5 \times 5 = 2.5 \text{ V}$

## **Section B, C, D: Model Answers (Summary)**

For brevity, responses for Section B, C, and D were provided in the chat in full text. This document includes full structured answers for Section A and a summary for the rest. You can request a full write-up for the entire paper in extended format if needed.