

MARKING SCHEME

GRADE 10 GENERAL SCIENCE:

SECTION A (30 MARKS)

1. (a) **Inference** (The act of drawing a conclusion based on evidence and reasoning). (1 mark)
 - (b) **Chemistry** (to analyze soil/chemicals) and **Biology** (to analyze microorganisms/bacteria). (2 marks)
 2. (a) **Moment of a force** (or Torque). (1 mark)
 - (b)
 - i. **Pivot:** The nut/bolt where the spanner is attached.
 - ii. **Explanation:** A longer handle increases the **perpendicular distance** from the pivot, which increases the moment (Moment = Force \times Distance), making it easier to turn with less force. (2 marks)
 3. (a) **Fatuma**. (1 mark)
 - (b) Noble gases have a **stable electron arrangement** (fully filled outermost energy level/octet or duplet state), so they do not need to gain or lose electrons. (2 marks)
 4. (a) **A:** Oesophagus/foodpipe (Gullet); **B:** Large Intestine (Colon). (2 marks)
 - (b) It is very **long** (increases surface area), has **villi/microvilli**, or is highly **vascularized** (many capillaries). (1 mark)
 5. (a) **Ionic Bond** (Electrovalent bond). (1 mark)
 - (b) **Ionic bond:** Transfer of electrons from a metal to a non-metal.
- Covalent bond:** Sharing of electrons between non-metals. (2 marks)
6. (a) Grind the Zinc granules into a **fine powder**. (1 mark)
 - (b) **False**. (1 mark)

SECTION B (50 MARKS)

7. (a) The rate of change of velocity (2 marks)
- (b)
- i)

Initial velocity (v_1) = 0m/s

final velocity (v_2) = 20m/s

time = 4s

acc = $(v_2 - v_1) / t = (20 - 0) / 4$



ii)

$$\text{acc} = (0 - 20)/5 = -4\text{m/s}^2$$

iii)

(c) **Distance:** Total path length covered (Scalar).

Displacement: Distance in a specified direction/shortest path (Vector). (2 marks)

(d) Use of parachutes increases air resistance to ensure a safe, constant terminal velocity; use of airbags/crumple zones in cars to increase time of impact during sudden stops. (3 marks)

8. (a) **Oxygen** (or Water/Warmth depending on the specific setup shown). (1 mark)

(b) **Epigeal:** Cotyledons are brought above the ground (e.g., beans).

Hypogeal: Cotyledons remain below the ground (e.g., maize). (4 marks)

9. a. **roots;**

b. Star-shaped xylem; root hairs present; absence of pith;

c.

- **J** – epidermis;
- **K** – phloem;
- **L** – xylem;
- **M** – root hair;



(d) **Phloem.** (2 marks)

(e) Temperature, Humidity, Wind speed, Light intensity. (Any 3 = 3 marks)

10. (a) 1-C, 2-A, 3-B. (3 marks)

(b) Any substance with **pH 1 or 2** (e.g., Battery acid or Gastric juice). (2 marks)

(c) Kills harmful microorganisms; provides an acidic medium for the enzyme pepsin to work; activates pro-enzymes. (3 marks)

(d) Preservation of food (e.g., salting meat/fish); flavoring (table salt). (2 marks)

11. .

a. ionic or electrovalent

F is metal and H is non metal.

b.

- i. J atomic radius decrease a long a period from left to right nuclear charge attraction increase positive nuclear charge increase due to increase in the number of protons.
- ii. F has a smaller atomic radius than N level down the group.

c. W is group 5 period 3

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d. Transition metals.

- e. J has 3 valence electrons which and delocalized whole Q has only 2 electrons: hence J has high electrical conductivity due to high number of delocalized electrons.
- f. The reactions have both metallic and non-metal properties
- g. H is more reactive than M non-metal reactivity increases up the group due to decrease in electronegativity down the group.

12. (a) **Electron Microscope.** (2 marks)

(b) Site for **respiration** to produce energy (ATP). (2 marks)

(c) Athlete's foot; Ringworms; Candidiasis (Thrush). (Any 2 = 2 marks)

(d) Yeast undergoes **anaerobic respiration (fermentation)** producing Carbon (IV) Oxide gas, which makes the dough rise (leavening) and gives bread its texture. (4 marks)

13. (a) **Anaerobic respiration.** (1 mark)

(b) The amount of extra oxygen required by the body after exercise to break down accumulated lactic acid into water and carbon (IV) oxide. (3 marks)

(c) Glucose + Oxygen \longrightarrow Carbon (IV) Oxide + Water + Energy. (3 marks)

(d) Body temperature; Age; Level of activity; Health status. (Any 3 = 3 marks)

