

SECTION A [30 MARKS]

Answer ALL Questions

Question 1

[15]

a) **Direction: For each question, there are four alternatives: A, B, C and D. Choose the correct alternative and circle it. Do not circle more than ONE alternative. If there are more than one choice circled, NO score will be awarded.**

i. Tashi noticed plants growing on a rock while climbing a cliff. These plants have the ability to adapt in the rocky environment. Which class of plants did he observe?

- A Epiphytes
- B Xerophytes
- C Lithophytes
- D Hydrophytes

ii. A girl has mistakenly poured petrol in the water. The best method for her to separate the petrol-water mixture is by

- A boiling.
- B filtration.
- C evaporation.
- D using a separating funnel.

iii. A student conducted an experiment to identify an unknown solution 1 and solution 2, and obtained the following result. Based on the result, he concluded that

Solution	Blue litmus	Red litmus	Universal indicator
solution 1	turned red	no change	formed red colour
solution 2	no change	turned blue	formed blue colour

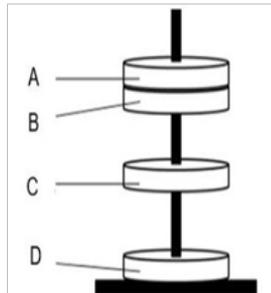
- A both are basic solutions.
- B both are acidic solutions.
- C solution 1 is basic and solution 2 is acidic.
- D solution 1 is acidic and solution 2 is basic.

- iv. If a bag of rice weighs 50 kgf at an altitude of 100 meters above the sea level, the weight of the same bag of rice at 3000 meters will be
- A 50 kgf.
 B 100 kgf.
 C less than 50 kgf.
 D more than 50 kgf.
- v. You are provided with a list of food groups as shown in the table below. If you are a nutritionist, which group of foods would you recommend?

I	II	III	IV
Rice	Spinach	Bread	Rice
Orange	Butter	Apple	Chicken
Oil	Bread	Butter	Broccoli
Mango	Peach	Oil	Apple

- A I
 B II
 C III
 D IV
- vi. When observing an archery player pulling the bowstring and maintaining his aim at the target, what form of energy is stored in the stretched bow?
- A kinetic energy
 B potential energy
 C chemical energy
 D mechanical energy
- vii. Which of the following best describes the process of photosynthesis?
- A The process by which plants absorb nutrients from the soil.
 B The process by which plants give out oxygen into the atmosphere.
 C The process by which plants change glucose into energy for growth and development.
 D The process by which plants use carbon dioxide, water, sunlight and chlorophyll to produce glucose and oxygen.

- viii. Karma placed magnets A, B, C, and D close to each other on a wooden stand as shown below. He observed magnets A and B attracted each other, while magnets C and D did not attract each other. To connect all four magnets, which magnet should he flip?



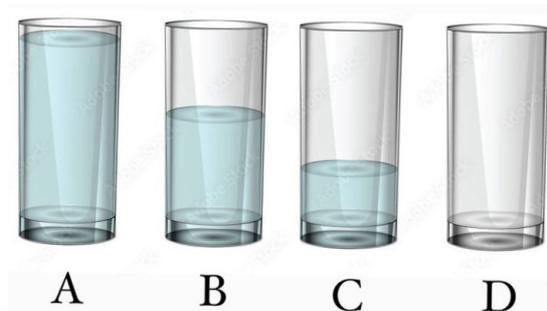
- A Magnet D
- B Magnet C
- C Magnet B
- D Magnet A

- ix. The physical features observed in the figure given below is caused due to



- A the separation of light waves as they pass through the water.
- B the decrease in speed of light as it travels from air to water medium.
- C bouncing back of light waves when it hits against the surface of water.
- D redirection of light waves from their original path as they interact with the water.

- x. Some people often complain about the unpleasant taste of hard water. The primary cause of the unpleasant taste of water is due to
- A high salt content.
 - B presence of harmful chemicals.
 - C high levels of sodium and nitrogen.
 - D high levels of calcium and magnesium.
- xi. Deki, a 12-year-old, undergoes the onset of menstruation, pubic hair growth, and a rapid increase in her height. These changes are considered as
- A physical change.
 - B emotional change.
 - C mechanical change.
 - D psychological change.
- xii. In the feeding relationship where a hawk consumes a snake that has consumed a mouse, the hawk can be classified as a
- A tertiary consumer.
 - B primary producer.
 - C primary consumer.
 - D secondary consumer.
- xiii. Pema conducted an experiment at home with four glasses filled with water as shown below. Which of these glasses will produce a high-pitched sound when they are struck on their rims with a spoon.



- A Glass A
- B Glass B
- C Glass C
- D Glass D

- xiv. Which of the following statements correctly describes the occurrence of a solar and lunar eclipse?
- A both eclipses occur on a new moon day
 - B both eclipses occur on a full moon day
 - C solar eclipses occur on a new moon day and lunar eclipse occurs on a full moon day
 - D lunar eclipse occurs on a new moon day and a solar eclipse occurs on a full moon day
- xv. Which of the following statements describe the density of substances?
- A Density is a measure of the gravitational force.
 - B Density is a measure of the weight of an object.
 - C Density is a measure of the volume of an object.
 - D Density is the mass of a substance per unit volume.

b) Direction: Fill in the blanks with appropriate words.

[5]

i.	The molecular formula of sodium chloride is _____.	
ii.	The blood that flows from different parts of the body to the heart is _____ blood.	
iii.	When you throw an object in the air, it eventually falls to the ground due to _____.	
iv.	The process of _____ leads to the development of new seedlings.	
v.	When light strikes a smooth surface and bounces off, it undergoes the process known as _____ reflection.	

- c) **Direction: Match each item in column I against the most appropriate item in column II. Write only the alphabet against the number in the space provided in answer column.** [5]

Column I	Column II
i. Smallest particles	a. chemical change
ii. Boiling of an egg	b. food chain
iii. Feeding relationship	c. phosphorus
iv. The bulbs in the house have the same brightness	d. atom
v. The size of apples in the orchard	e. parallel circuit
	f. potassium
	g. molecule

Answer
i.
ii.
iii.
iv.
v.

- d) **Direction: Write TRUE or FALSE against each statement in the space provided.** [5]

i. Temporary magnets are magnetized when electric current passes through or when exposed to other external magnetic fields. (_____)	
ii. Birds are the only animals that lays egg. (_____)	
iii. The best separation method to separate the mixture of orange squash and water is filtration. (_____)	

iv. Consumption of a high-protein diet is necessary for bodybuilding and the promotion of muscle growth. (_____)	
v. The Equator experiences high temperature and humidity compared to the poles. (_____)	

SECTION B [30 MARKS]

Direction: Answer the following questions in the spaces provided. The marks for each question are given in the brackets [].

Question 2

a) Consider a scenario where you have 2 bags of rice, which weigh 54 kgf, and you take it from the Earth to the moon. Answer the following questions:

i. Calculate the weight of the rice on the moon. **[1]**

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ii. Why does the weight of rice change on the moon? **[1]**

- b) You discovered an unknown solution at home and wished to identify whether it is acidic or a basic solution. Using materials such as flower petals, beetroot, or red cabbage, describe a simple process to prepare your indicator to test the unknown solution. [2]

- c) You have been approached by a friend to provide recommendations for the type of electric connection to be used in a newly constructed house. Which type of electric connection would you recommend? Provide **THREE** reasons to support your answer. [2]

Question 3

- a) Imagine a forest ecosystem with frogs, grasses, eagles, grasshoppers, and snakes. Draw an ecological pyramid to represent the ecosystem with proper labelling and explain the energy transfer in it. [2]

- b) You are provided with a torch, a mobile phone, and a screen. Using these materials, draw and label a model to represent the sun, earth, and moon in a solar eclipse. Explain the cause of a solar eclipse based on the model. [2]

c) Which drums shown below will produce a louder sound? Why? [2]



A

B

Question 4

a) Dorji was working in his field and he saw sparrows eating wheat. Based on his observation answer the following questions. [1]

i. Which class of animals and plants did he observe?

ii. What are **TWO** characteristics of sparrows that differentiate them from other classes of animals? [2]

- b) Reading nutrition facts on packaged food is important before buying the food. Support [1]
the statement with **ONE** reason.

- c) The heart receives and pumps deoxygenated and oxygenated blood in our body. [2]
Explain their circulation path.

Question 5

- a) Students conducted an experiment on the solubility of 100 g salt in 40 ml of water at different temperatures without stirring as shown below. Study the information given below and answer the following questions.

Beaker A	Beaker B	Beaker C
		
water temperature = 15°C Dissolving time = 20 minutes Room Pressure = 1 atmosphere	water temperature= 90°C Dissolving time =4 minutes. Room Pressure = 1 atmosphere	water temperature = 40°C Dissolving time =12 minutes. Room Pressure = 1 atmosphere

i. In which beaker will salt dissolve faster? Why?

[1½]

ii. Identify the dependent, independent, and controlled variables in the experiment.

[1½]

b) Why is soft water better for healthy hair and skin?

[1]

c) Why is chewing food a physical change whereas digestion a chemical change?

[2]

Question 6

a) [2]

- i. People prefer cross pollination over self-pollination. Support the statement with **TWO** points.

- ii. How are insect pollinated flowers different from wind pollinated flowers? Mention **TWO** differences. [2]

Insect Pollinated	Wind Pollinated	

b) Write a difference between reflection and refraction. [1]

- c) A bicycle of mass 30 kg is moving with a speed of 20 m/s. Calculate the kinetic energy. [1]

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