



GRADE 8

NATURAL SCIENCES

JUNE 2016

TIME: 1½ HOURS

MARKS: 70

INSTRUCTIONS

1. The paper consists of NINE questions. Answer ALL the questions.
2. Number all the answers exactly as the questions are numbered in the paper.
3. In case of calculations, show all steps as well as all substitutions.

SECTION A

QUESTION 1

Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A – D) next to the question number (1.1 – 1.10).

1.1 Which two products do plants produce during photosynthesis?

- A Carbon dioxide and oxygen.
- B Oxygen and glucose.
- C Glucose and carbon dioxide.
- D Nitrogen and glucose. (1)

1.2 Which one of the following is arranged from largest to smallest?

- A Population, community, ecosystem, biosphere.
- B Ecosystem, biosphere, community, population.
- C Biosphere, ecosystem, community, population.
- D Biosphere, ecosystem, population, community. (1)

1.3 Which statement is TRUE for carnivores in an ecosystem?

- A They eat only plants.
- B They are eaten by herbivores.
- C They make their own food.
- D They are fewer in number than herbivores. (1)

1.4 Which statement is NOT true for microorganisms?

- A They are all around us.
- B They are all harmful.
- C They feed, grow and reproduce.
- D They can only be seen under a microscope (1)

1.5 Malaria is caused by a ...

- A protist.
- B fungi.
- C bacteria.
- D virus.

(1)

1.6 The particles that move around the nucleus of an atom are the ...

- A electrons.
- B electrons and protons.
- C neutrons.
- D protons.

(1)

1.7 What is a chemical compound?

- A A substance that consists of only one kind of atom.
- B A subatomic particle.
- C A substance that consists of two or more different kinds of atoms.
- D A combination of two protons and two electrons.

(1)

1.8 Which one of the following statements best describes the particles in a gas?

- A They are moving very slowly and are far apart.
- B They are very close together and are only able to vibrate.
- C They are moving very fast and are far apart.
- D They are stationary and are not able to vibrate.

(1)

1.9 Melting is the change in state of a ...

- A liquid to a solid.
- B liquid to a gas.
- C solid to a gas.
- D solid to a liquid.

(1)

1.10 Vinegar is added to baking soda and bubbles of carbon dioxide rapidly form. A cloudy liquid is left behind. What are the products in this chemical reaction?

- A Carbon dioxide and the cloudy liquid.
- B Vinegar and the cloudy liquid.
- C Vinegar and baking soda.
- D Carbon dioxide and baking soda.

(1)

[10]

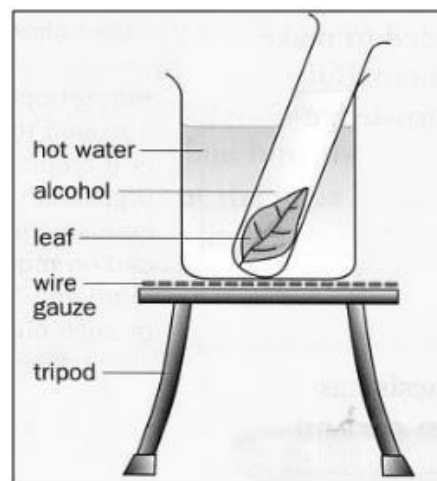
QUESTION 2

Choose the item from **Column B** that matches the description in **Column A**. Write only the letter (A - E) next to the question number (2.1 – 2.5), e.g. 2.1 F.

	Column A	Column B
2.1	Microorganisms that cause TB	A Mixtures
2.2	They are separated by physical means	B Protons
2.3	Converts glucose into energy	C Omnivores
2.4	Positively charged particles	D Respiration
2.5	Eat both plants and animals	E Bacteria

[5]**SECTION B****QUESTION 3**

Study the diagram below. A test for starch is conducted in a green leaf from a plant that was exposed to sunlight for a few hours.

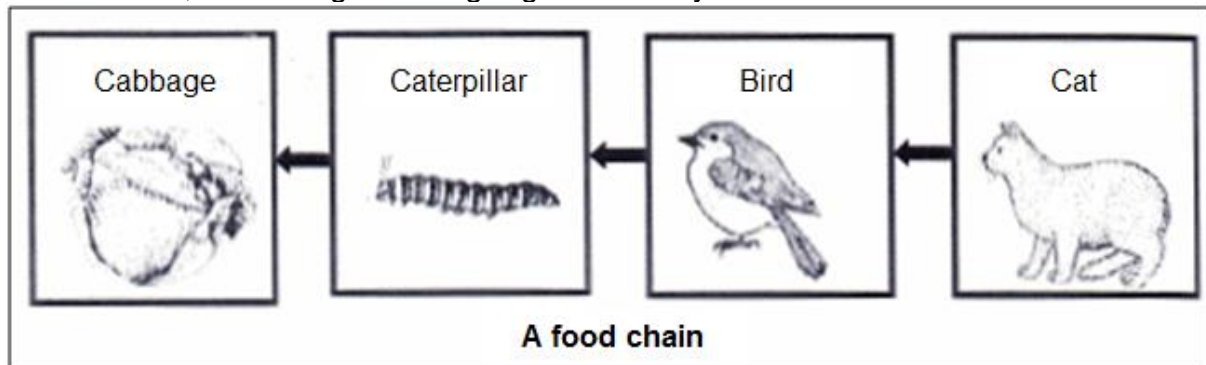


- 3.1 Write down a hypothesis for this investigation. (1)
- 3.2 Identify the:
- 3.2.1 Independent variable. (1)
- 3.2.2 Dependent variable. (1)
- 3.3 Why is it important to make sure that one of the leaves being tested has no starch in it? (1)
- 3.4 What can be done practically to make sure that some leaves do not contain any starch? (1)
- 3.5 Why do you need to boil the leaf in water before testing it for starch? (1)

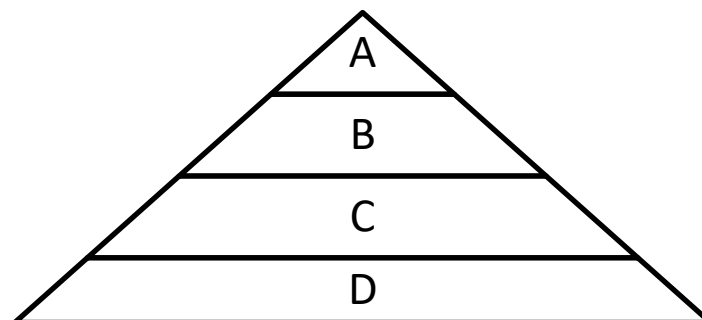
[6]

QUESTION 4

- 4.1 A group of grade 8 learners conducted an investigation of a food chain that exists in their school garden ecosystem. They decided to draw the food chain below, containing the living organisms they observed.



- 4.1.1 What mistake did they make when they were drawing the food chain? (1)
- 4.1.2 Write down a correct food chain using only the NAMES of the organisms given in the food chain above. (2)
- 4.1.3 What is the function of the cabbage in the food chain? (1)
- 4.1.4 What will happen in the food chain if all the birds are removed? (2)
- 4.2 The accompanying diagram represents an ecological pyramid of a certain food chain in nature.



- 4.2.1 Which LETTER represents the producers? (1)
- 4.2.2 Why are there usually only a few organisms at the top of an energy pyramid? (2)
- 4.2.3 What type of consumer is represented by the letter **C**? (1)
- 4.2.4 Which TWO letters represent carnivores? (2)
- 4.2.5 Which type of organism is not represented in the diagram? (1)

[13]**QUESTION 5**

Read the passage about AIDS below:

Acquired Immune Deficiency Syndrome (AIDS) is caused by a virus and is one of the most feared diseases today. It is serious because it is deadly and incurable. More than a million people world-wide have died of the disease and many more are infected.





The virus, which causes AIDS, is known as Human immuno-deficiency virus (HIV). HIV can enter the body during sexual intercourse or by an infected person's blood getting into someone else's blood. The risk of contracting AIDS is extremely high under promiscuous persons and drug addicts who share injection needles.

HIV destroys the immune system of the body and leaves the victim without any defence against diseases. The body of an infected person becomes easily affected by illnesses, such as pneumonia and rare forms of cancer. Pregnant mothers infected by HIV can pass the disease to their unborn child with fatal consequences.

- 5.1 What TYPE of microorganism causes AIDS? (1)
 - 5.2 State ONE way of how a person can become infected with AIDS. (1)
 - 5.3 Which group of individuals has the highest risk of contracting AIDS? (1)
 - 5.4 Why are people with AIDS easily affected by illnesses? (1)
 - 5.5 Name ONE illness that people with AIDS may suffer from. (1)
- [5]**

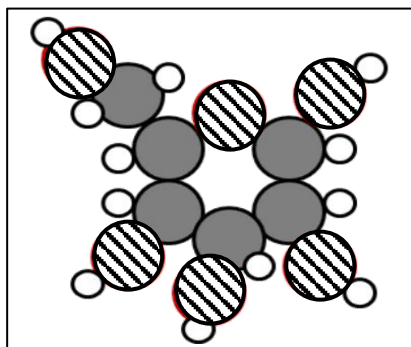
QUESTION 6

- 6.1 Look at the following diagrams. Decide whether the diagram represents an element or a compound. Only write down the number and ELEMENT or COMPOUND.

Diagram	ELEMENT OR COMPOUND?
	6.1.1
	6.1.2
	6.1.3
	6.1.4

(4)

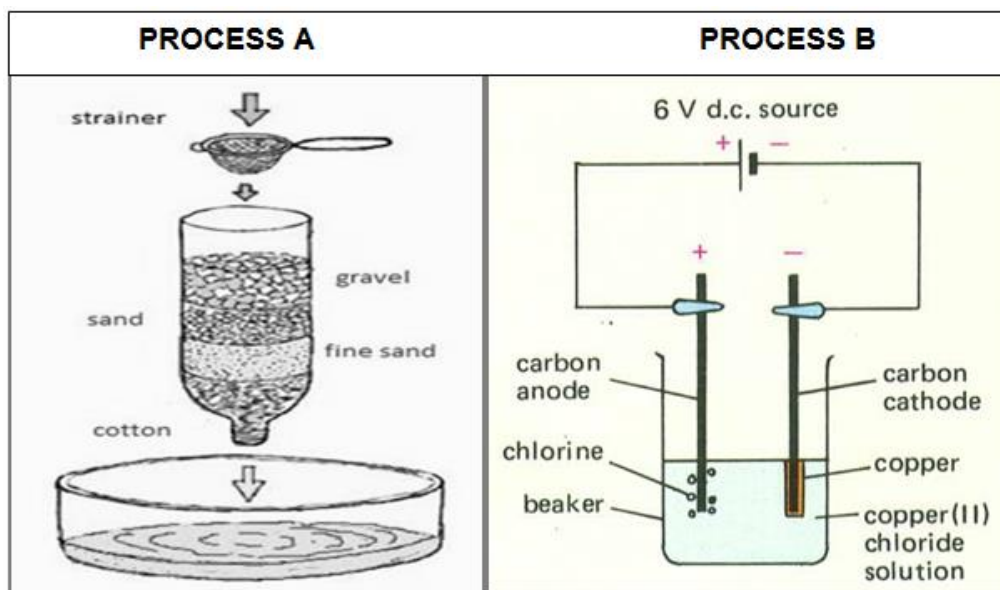
- 6.2 Look at the following complex molecule:



- 6.2.1 How many atoms make up this molecule? (1)
- 6.2.2 How many different types of atoms make up this molecule? (1)
- 6.2.3 What holds the atoms together in this molecule? (1)
- [7]**

QUESTION 7

The figure below illustrates one process that is used to separate mixtures and another process that is used to separate compounds.

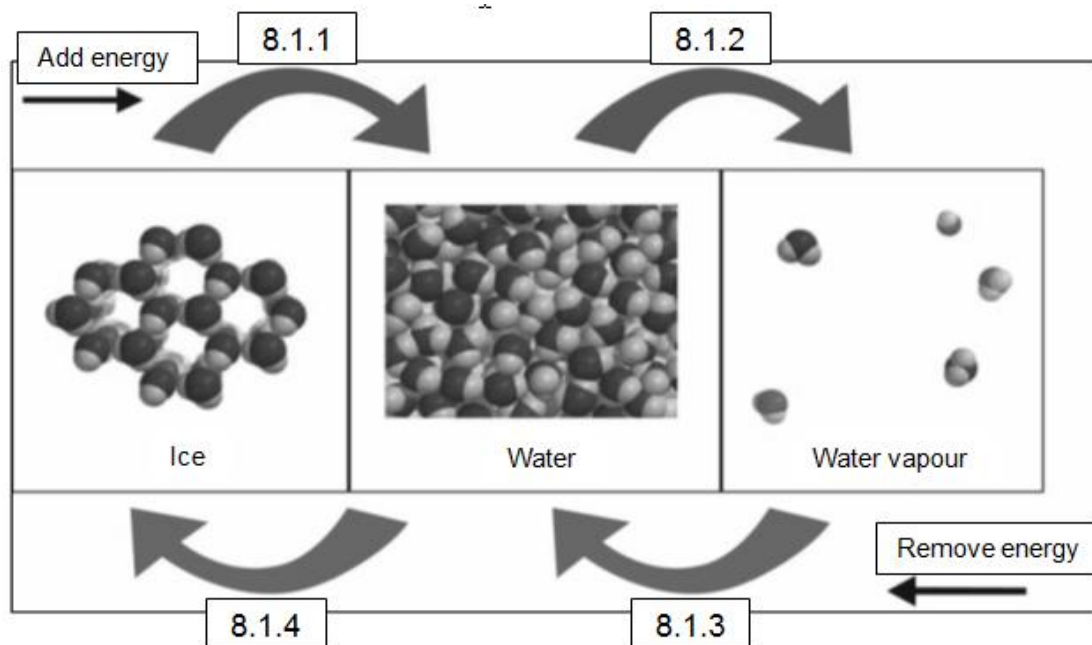


- 7.1 Give the correct name for **process A**. (1)
- 7.2 Name **process B**. (1)
- 7.3 Which process (**A** or **B**) may be used to separate sand and water? (1)
- 7.4 Which process (**A** or **B**) may be used to separate a compound? (1)
- 7.5 Which process (**A** or **B**) involves the breaking of bonds between the particles of a substance? (1)
- 7.6 In which process (**A** or **B**) do we find a filtrate? (1)

[6]

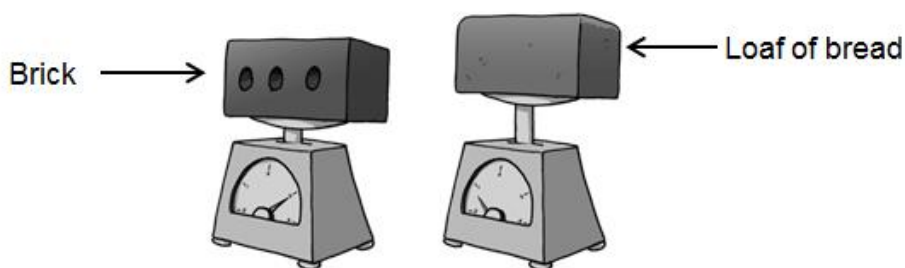
QUESTION 8

- 8.1 The following diagram illustrates how water changes from one phase to another. Processes like evaporation, condensation, freezing (solidification) and melting are illustrated.



Name processes **8.1.1** to **8.1.4**. Write down the number and the process. (4)

- 8.2 A brick is put on a mass meter. A loaf of bread with the same length, breadth and height as the brick is put on an identical scale.

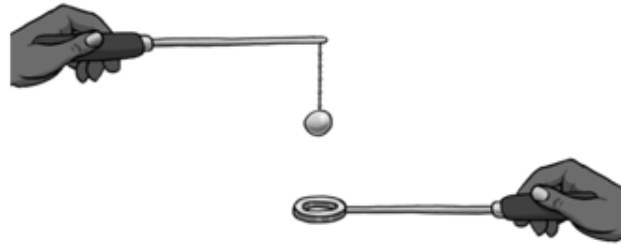


- 8.2.1 Which of the brick or the bread has the greater volume? (1)
- 8.2.2 Which one of the brick or the bread has more mass? (1)
- 8.2.3 Which one, the brick or the bread, would have the greater density? Explain your answer. (2)
- 8.3 Use the particle model of matter to explain why a gas can be compressed easily. (2)

[10]

QUESTION 9

The following diagram shows a metal ball and ring apparatus. The ring and ball are both made of brass. At room temperature, the ball is just the right size to pass through the ring.



- 9.1 Will the ball still pass through the ring after the ball has been heated? (1)
- 9.2 Will the brass ball have more mass after it has expanded? Explain your answer. (2)
- 9.3 What will happen to the SIZE of the brass ball when it cools down again? Explain your answer. (2)
- 9.4 Answer the following questions about the heat and particles in a substance. Write down ONLY the correct word/s in the brackets.
- 9.4.1 What is added to matter when it is heated? (Energy; Mass) (1)
- 9.4.2 How do particles move when the substance is heated? (Particles move faster; Particles move slower.) (1)
- 9.4.3 What happen to the spaces between the particles when a substance is heated? (Spaces become smaller; Spaces get bigger.) (1)
- [8]**

TOTAL: 70