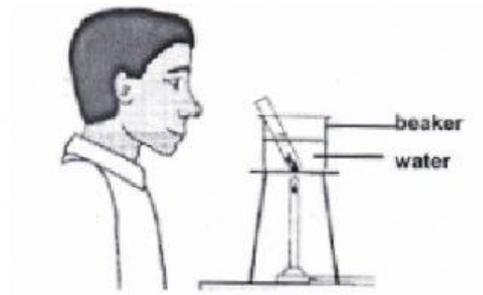


GRADE 10 NATURAL SCIENCES

QUESTION 1

1.1.1 In order to test a hypothesis, a scientist designs an experiment. He/she asks 27 learners to make observations about boiling water in a beaker. The diagram below shows one of her learners.

Because the learners must be kept safe from harm, which statement BEST describes the mistakes in the laboratory practices shown in the diagram below?



- A. The opening of the test tube is pointed toward the learner and he is not wearing safety goggles.
- B. The test tube has no stopper in it and the learner is not wearing safety goggles.
- C. The flame is too high and the test tube is has no stopper in it.
- D. The beaker has water in it and the flame is under the tripod.

(2 marks)

1.1.2 Thembisa pours herself a glass of cola with ice in it. Identify which objects are solid, liquid, and gas.



A glass of cola with ice in it

- A. The cola is the solid, the ice is the liquid, and the bubbles are the gas.
- B. The ice is the solid, the bubbles are the liquids, and the cola is the gas.
- C. The bubbles are the solids, the cola is the liquid, and the ice is the gas.
- D. The ice is the solid, the cola is the liquid, and the bubbles are the gas.

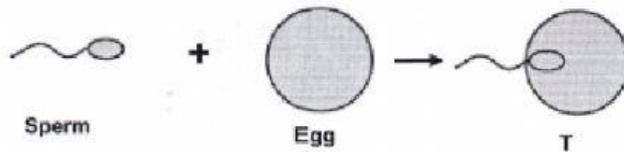
(2 marks)

1.1.3 A student is conducting an experiment about seed germination. When the seeds germinate, which part of the plants will grow first?

- A. Leaf
- B. Root
- C. Stem
- D. Flower

(2 marks)

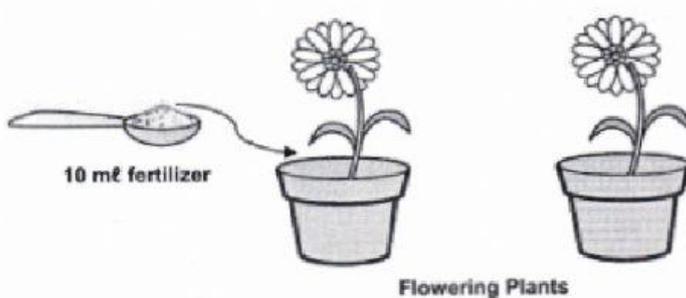
1.1.4 Which process is shown in the diagram below?



- A. metamorphosis
- B. regulation
- C. fertilization
- D. respiration

(2 marks)

1.1.5 A learner will measure and record the growth of two flowering plants every other day for 10 days.



According to the diagram, which question is being tested?

- A. How much fertilizer do flowering plants need?
- B. Does fertilizer added to the soil lead to taller flowering plants?
- C. Do flowering plants grow better when watered with salt water?
- D. How tall do flowering plants grow?

(2 marks)

1.1.6 The solid part of Earth's surface is called the ...

- A.** hydrosphere
- B.** lithosphere
- C.** troposphere
- D.** atmosphere.

(2 marks)

1.1.7 The largest body in our solar system is ...

- A.** Earth
- B.** the Sun
- C.** Jupiter
- D.** the Moon

(2 marks)

1.1.8 Volcanoes erupt when they become active. Until an eruption occurs, volcanoes are described as...

- A.** stagnant
- B.** dormant
- C.** extinct
- D.** plugged

(2 marks)

1.1.9 Study the diagrams below and answer the questions that follow.

Martin shines a torch on a globe. It models the Sun shining on the Earth.



Estimate what time of day it would be on the Earth at place A.

- A. A = 6.00 pm
- B. A = 12.00 pm
- C. A = 9.00 pm
- D. A = 2.00 pm

(2 marks)

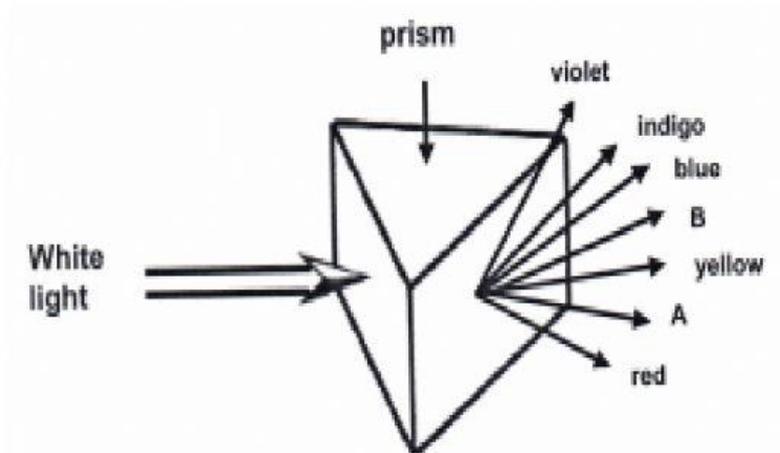
1.1.10 which statement best describes Earth's movement in relation to the sun?

- A. The sun revolves around the Earth
- B. The sun and Earth revolve around each other
- C. The Earth revolves around the sun
- D. The sun and Earth revolve around other planets

(2 marks)

(10 x 2 = 20 marks)

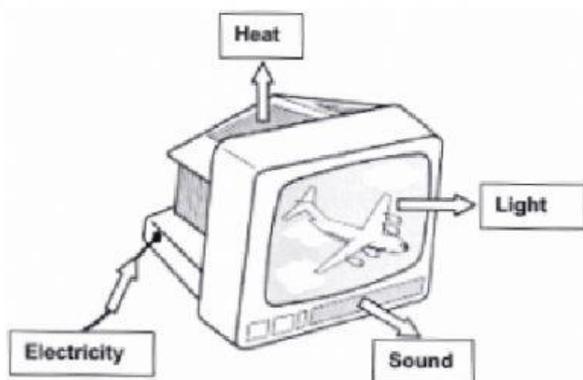
1.4 Study the diagram below and answer the questions that follow.



Name the missing colors of the spectrum labelled **A** and **B**.

(2 x 1 = 2 marks)

1.5 Study the diagram below which shows the energy transferred each second by a television set and answer the questions that follow.



Energy transferred by a television set

1.5.1 State the form of energy which is transferred as waste energy by the television set. (1)

1.5.2 How will the waste energy mentioned in Question 1.6.1 affect the temperature of the air around the television set? (1)

1.5.3 State ONE precautionary measure you will take to save energy wasted by a television set at your home. (2)

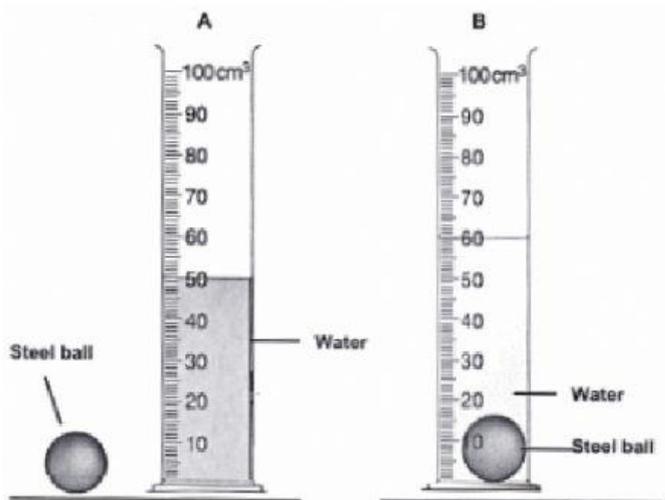
1.5.4 State TWO things that we will be saving within our environments by not wasting energy with appliances like a television set. (4)

(2+1+1+2+4 = 10 marks)

TOTAL QUESTION 1 (44 Marks)

QUESTION 2

2.1 A learner set up the apparatus shown below to measure the volume of a steel ball. Study the diagrams below and answer the questions that follow.



The apparatus set up to measure the volume a steel ball

2.1.1 Give the name of the apparatus shown above, which is used to measure the volume of a steel ball.

(1 mark)

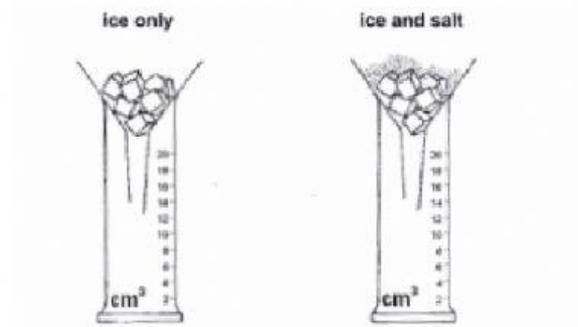
2.1.2 When a steel ball was carefully placed into the apparatus **A**, it resulted in the arrangement shown in apparatus **B**. Write down the new reading of water in apparatus **B**?

(1 mark)

2.1.3 Calculate the volume of a steel ball from the information shown above. Show all Your calculations.

(2 marks) (= 4 marks)

2.2 In winter, people put salt on the road to make the ice melt. John investigates the effect of salt on melting ice. He puts the same amount of ice in two funnels. He adds salt to the ice in the second funnel.

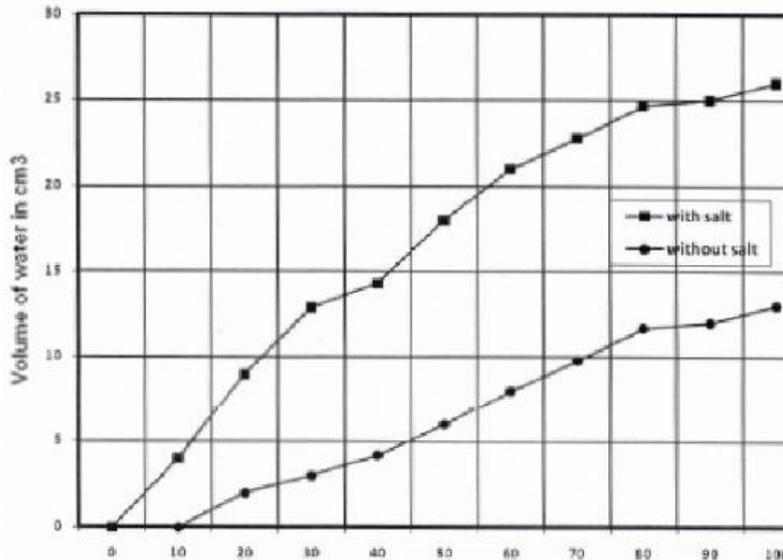


An investigation on the effect of salt on melting ice

The ice starts to melt. Every ten minutes, John measures how much water is in each cylinder. John's results are indicated in the graph below.

Study the graph below and answer the questions that follow.

The effects of salt on melting ice over a period of time



2.2.1 One axis on the graph has been labelled. Write the label and the units for the other axis.

(2 marks)

2.2.2 What has John found out about the effect of salt on melting ice?

(2 marks)

2.2.3 John concludes: '**The more salt I add, the steeper the line on the graph becomes**'.

John's results on the graph do not support his conclusion. Choose **ONE** statement below to show why his results do not support his conclusion.

- a. The line on the graph did not get steeper.
- b. He used the same amount of ice each time.
- c. He did not try different amounts of salt.
- d. He only measured the water every ten minutes.

(2 marks)
(2+2+2 = 6 marks)

2.3 Study the picture below of Rick using a thermometer to measure the temperature of some water.



Using a thermometer

2.3.1 State TWO things that are wrong with the way Rick is trying to measure the temperature-of the water?

(4 marks)

2.3.2 Rick and Kashief want to find out how the temperature of water affects the time taken for sugar to dissolve.

(a) What is the **ONE** factor they should change as they carry out their investigation?

(2 marks)

(b) State **ONE** of the factors they should keep the same to make their investigation **valid**.

(2 marks)
(4+2+2 = 8 MARKS)