



ALEXANDER ROAD HIGH SCHOOL

March 2021

PHYSICAL SCIENCES CONTROL TEST

55 MINUTES

MH

GRADE 10

TOTAL = 50

Instructions:

- The question paper consists of 6 questions.
- Answer all the questions.
- Answer section A on the answer sheet provided AND section B on folio sheets.
- A non-programmable calculator may be used.
- Number the answers correctly according to the numbering system.
- Round off to two (2) decimal places where necessary.

SECTION A

(answer on the answer sheet)

QUESTION 1:

Four possible options are provided as answers to the following questions. Each question has only one correct answer. Choose the correct answer and write the letter (A – D) next to the relevant question number (1.1 – 1.4) on the answer sheet.

- 1.1 Which of the following units is **NOT** a SI unit?
- A. °C
 - B. mole
 - C. $\text{m}\cdot\text{s}^{-1}$
 - D. kg
- 1.2 Which one of the following combinations will be a correct classification of elements, compounds and a mixture?

	Element	Compound	Mixture
A	oxygen	table salt	bronze
B	sodium	water	sugar
C	water	steel	salt water
D	cobalt	silicon	sand and water (mud)

- 1.3 What would be the most effective way of separating two liquid that mix, but have different boiling points?
- A. fractional distillation
 - B. By using a separating funnel.
 - C. chromatography
 - D. evaporation
- 1.4 During an experiment, a group of learners observe water boiling in a beaker. Which **ONE** of the following best explains the learners' observation?
- A. The water is releasing heat energy.
 - B. The water is undergoing a physical change.
 - C. The water is undergoing a chemical change.
 - D. The water is decomposing into its elements.

TOTAL SECTION A = [8]

SECTION B

(answer on folio paper)

QUESTION 2:

2.1 Give the SI units for the following physical quantities.

- 2.1.1 time (1)
- 2.1.2 temperature (1)
- 2.1.3 electrical current (1)

2.2 Convert the following measurements to the unit that is indicated:

- 2.2.1 50 km to m (1)
- 2.2.2 275 mA to A (1)
- 2.2.3 51,5 cm to m (1)
- 2.2.4 3 hours 20 minutes to seconds (2)
- 2.2.5 120 km.h⁻¹ to m.s⁻¹ (2)

[10]

QUESTION 3:

A group of learners are investigating the effect of surface area on the evaporation rate of water. They use five different beakers. They have openings of 12 cm², 24 cm², 36 cm², 48 cm² and 60 cm² respectively. 100 ml of water is placed in each beaker. The time it takes for all the water in each beaker to evaporate, is recorded.

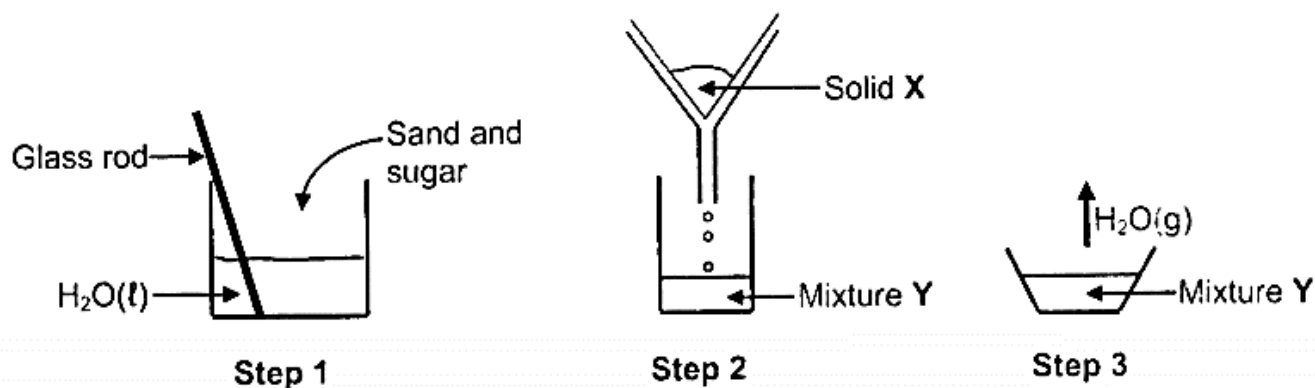
It was found that the water in the beaker with the biggest opening evaporated the fastest and the water in the beaker with the smallest opening took the longest to evaporate.

- 3.1 Write an investigative question for the experiment. (2)
- 3.2.1 Identify the **dependent** variable. (1)
- 3.2.2 Identify the **control** variable. (1)
- 3.3 Write a conclusion for the experiment. (2)
- [6]**

QUESTION 4:

4.1 The learners perform an experiment to separate a mixture of sand and sugar.

The experiment is done in three steps, as shown in the diagrams below.



- 4.1.1 Write down the name of the **process** illustrated in **step 2**. (1)
- 4.1.2 Write down the name of Solid X. (1)
- 4.1.3 Write down the name of Mixture Y. (1)
- 4.1.4 Is **step 3** a chemical or a physical process? (1)
- 4.2.1 Define the term **pure substance**. (2)
- 4.2.2 Complete the table below. Write down only the answer next to the question number.

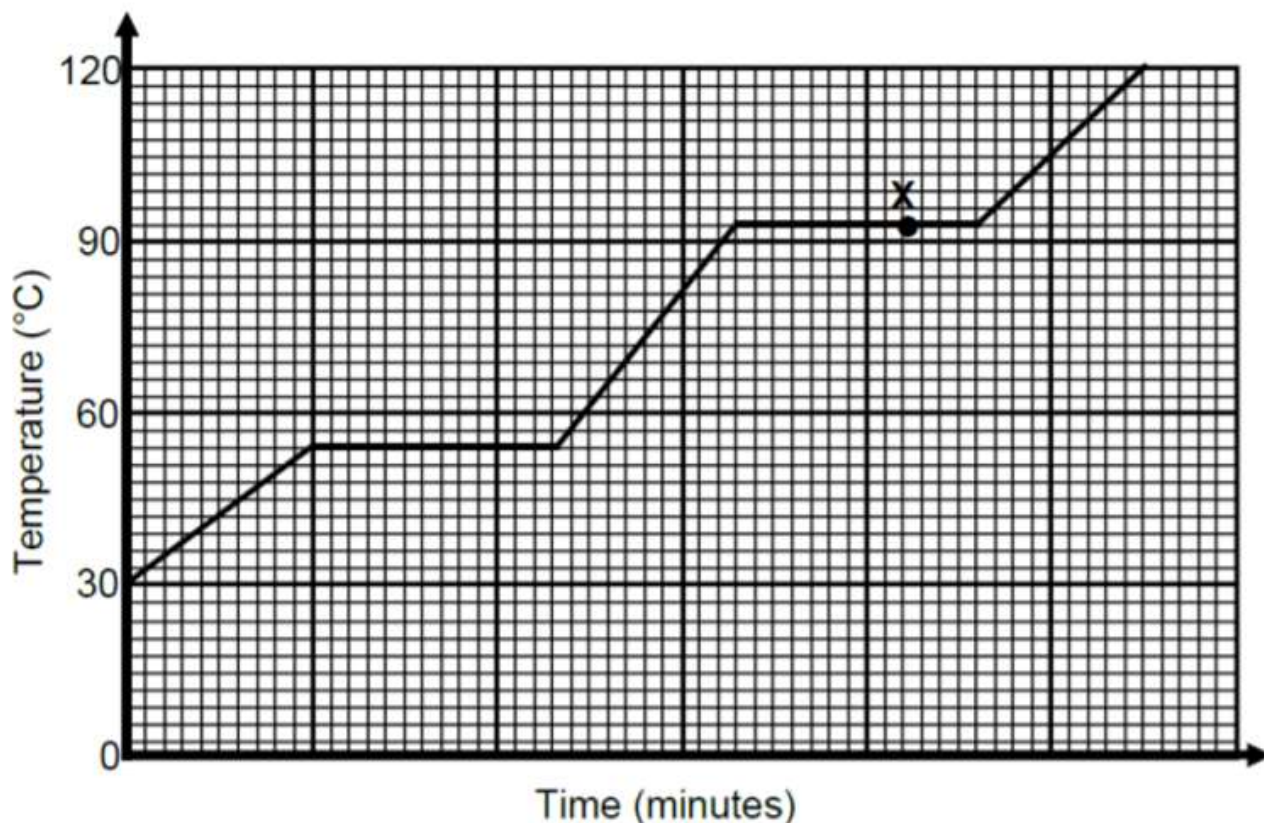
Substance	Element/Compound/Mixture	Reason
Nitrogen gas	3.2.2 a)	3.2.2 b)
Milk	3.2.2 c)	3.2.3 d)

(4)

[10]

QUESTION 5:

The heating curve of a pure substance at atmospheric pressure is shown in the graph below.



- 5.1 Give the **melting point** of the substance. (1)
- 5.2 Give the **boiling point** of the substance. (1)
- 5.3 Define the term **boiling point**. (2)
- 5.4 What is the state of matter of the substance at point X? (2)
- 5.5 Is the substance water? Give a reason for your answer. (2)
- 5.6 Does the substance undergo sublimation? Give a reason for your answer. (2)
- 5.7 The pressure at which the experiment was conducted is stated since air pressure has an influence on boiling point.

Explain why water boils at a lower temperature in Johannesburg than in Port Elizabeth (Gqeberha). (3)

[13]

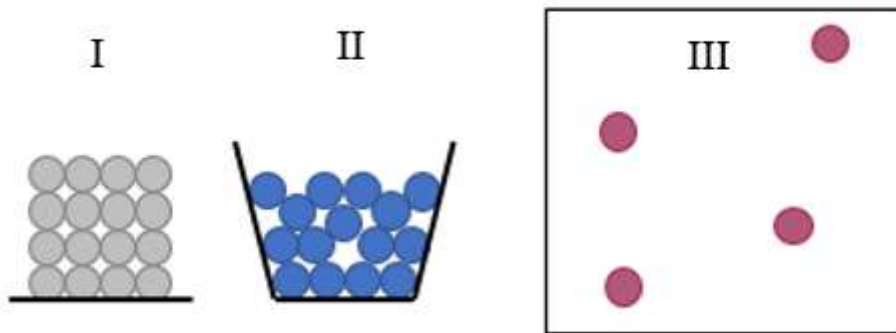
QUESTION 6:

The table below shows the boiling and melting points of substances A to D.

Substance	Melting Point (°C)	Boiling Point (°C)
A	133	444
B	-117	78
C	90	184
D	-220	-188

From the table above, write down the **LETTER** that represents the substance which is:

- 6.1 a solid at room 100°C. (1)
- 6.2 a liquid at room 100°C. (1)
- 6.3 Which **ONE** of the following diagrams represents the particle arrangement of substance **D** at -200°C? Write down only **I, II** or **III**. (1)



[3]

TOTAL SECTION B = [42]

TOTAL = [50]