LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION

CAPRICORN SOUTH DISTRCIT

PHYSICAL SCIENCES

TOPIC TEST 06

STATE OF MATTER AND KINETIC MOLECULAR THEORY

23.04.2026

MARKS: 20

DURATION: 30 Minutes

This Question paper consists of 05 (Five) Pages.

INSTRUCTIONS AND INFORMATION

1. Answer ALL your question in your answer book
2. This question paper consists of two questions
3. Start EACH question on a NEW page in the ANSWER BOOK
4. Number the answers correctly according to the numbering system used in this question paper
5. Leave ONE line between two sub-questions, e.g. between QUESTION 2.1 and QUESTION 2.2.
6. You may use appropriate mathematical instruments.
7. Show ALL formulae and substitutions in ALL calculations.
8. Round off your FINAL numerical answers to a minimum of TWO decimal places.
9. Give brief motivation, discussions, etc. where required.
10. You are advised to use the attached DATA SHEETS
11. Write neatly and legibly

QUESTION 1

Various options are provided as possible answers to the following questions. Each question has only ONE correct answer. Choose the answer and write only the letter (A–D) next to the question number (1.1 to 1.3)

1.1 Which ONE of the following statements best explains why gases are easily compressed?

A Gases are made up of particles which are in constant motio.

B The distance between the particles is large compared to the particle size.

C The particles collide with each other without incurring a loss of energy.

D When the average kinetic energy of the particles increases, the particles move faster. (2)

1.2 According to the Kinetic Molecular Theory, an increase in temperature causes particles to

A. decrease in mass

B. move more slowly

C. have less kinetic energy

D. gain kinetic energy (2)

1.3 Which change of state occurs when a solid changes directly into a gas?

A. Evaporation

B. Condensation

C. Sublimation

D. Freezing

(2)

[6]

QUESTION 2

Learners have investigated the melting and boiling points of 6 substances, A–D, and the results are given in the table below.

SUBSTANCES	MELTING POINT (°C)	BOILING POINT (°C)
A	3000	4200
B	200	500
C	-5	15
D	1083	2567

2.1 Define the term boiling point (2)

2.2 From the above table of results, write down the letter **(A–D)** that represents the substance(s) which:

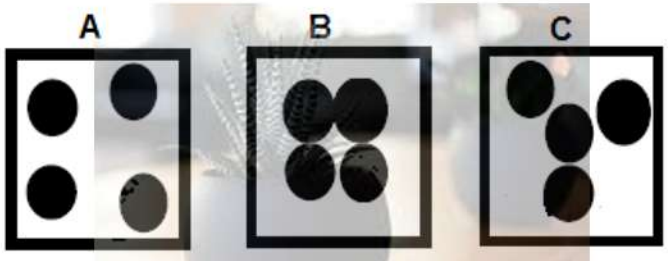
2.2.1 Is a gas at 25 ^{0}C (1)

2.2.2 Is a liquid at 300 ^{0}C (1)

2.2.3 Has the strongest forces of attraction between the particles (2)
Give a reason

2.2.4 Has the weakest forces of attraction (2)
Give a reason

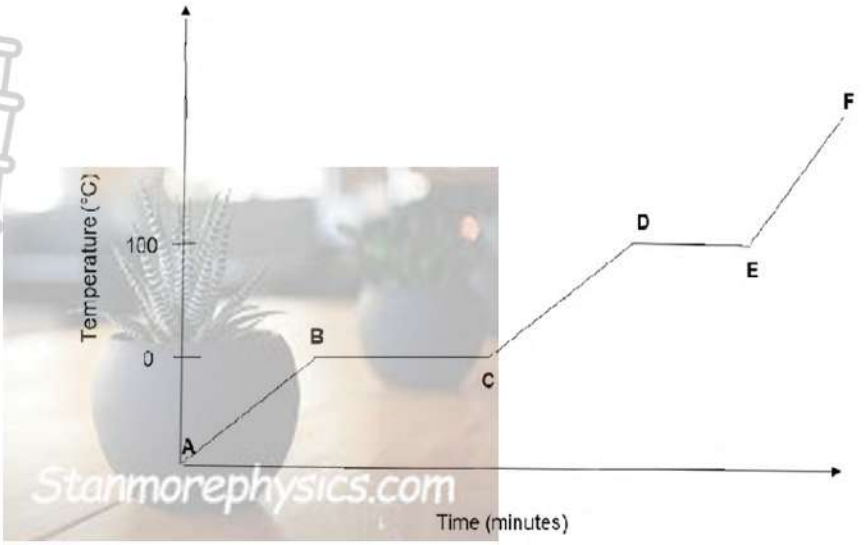
2.3 Grade 10 learners are investigating the effect of increasing temperature on three different substances (**A**, **B** and **C**).
Study the diagrams of the substances bellow and answer the following questions.



2.3.1 Rearrange the diagrams according to the increasing average kinetic energy of the substances. (2)

2.3.2 At which phase is substance **C**? (1)

The following diagram, not drawn to scale, represents the heating curve for a certain substance. Point A represents t = 0 minutes where the substance is a solid.



Use the information in the diagram to answer the following questions.

2.4 Write down:

2.4.1 Between which two letters is the vapour pressure equal to the atmospheric pressure? (1)

2.4.2 The phase of a substance between letters E and F (1)

2.4.3 The process taking place between letters B and C (1)

2.4.4 Explain why the temperature remains unchanged between point D and E. (2)

2.5 When you take a block of butter out of the fridge, it is hard. However, after 15 minutes at room temperature it is soft enough to spread. (3)

Use the kinetic theory to explain the above observation.

[19]

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GRADE 10

PHYSICAL SCIENCES

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STATES OF MATTER AND KINETIC MOLECULAR THEORY

23.04.2026

MARKS : 25

DURATION: 35 MINUTES

This memorandum consists of 2 pages

1

QUESTION 1

1.1 **B**✓✓ (2)

1.2 **D**✓✓ (2)

1.3 **C**✓✓ (2)

(6)

QUESTION 2

2.1 The temperature at which the vapour pressure of a liquid equals atmospheric pressure ✓✓ (2)

2.2 (1)

2.2.1 C✓ (1)

2.2.2 B✓ (1)

2.2.3 A✓ (2)

It has the highest melting point/ boiling point✓

2.2.4 C✓ (2)

It has the lowest melting point/ Boiling point✓

2.3 (2)

2.3.1 B, C, A✓✓ (2)

2.3.2 Liquid✓ (1)

2.4

2.4.1 D and E✓ (1)

2.4.2 Gas✓ (1)

2.4.3 Melting✓ (1)

2.4.4 The energy is used to overcome/ weaken the intermolecular forces/ forces of attraction✓✓ (2)

2.5 Due to the higher temperature outside:

- Particles have higher average kinetic energy./Particles vibrate (move) faster. ✓
- Forces of attraction (between molecules) become weaker. ✓
- Phase change starts to occur✓

(3)

(19)