Chapter 7 Model of matter – The Particulate Nature of Matter

Date: _____

Topical Worksheet

SECTION A – MCQ

*Each question is provided with **four** possible answers (**A**, **B**, **C** and **D**). Select the most appropriate answer and **write** your choice in the **brackets** provided.*

1 Which of the following statements about the particulate nature of matter is **not** true?

A Matter is made up of many tiny particles.
B Particles of all matter are constantly moving.
C Particles of a type of substance are of an equal size.
D Particles of all matter always move in a fixed manner. ( )

2 The particles of a certain substance can only vibrate about their fixed positions. This substance is most likely to be

A sugar **B** steam
C air **D** orange juice ( )

3 Liquid particles _____.

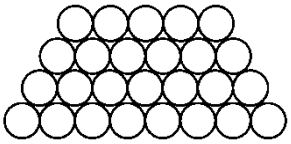
A vibrate about fixed positions
B are far apart from one another
C move freely over short distances
D are able to slide past one another ( )

4 Why are gas particles able to move freely over long distances?

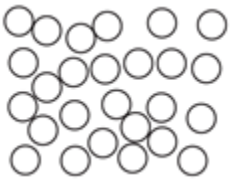
A They can slide past one another.
B They are far apart from one another.
C They are arranged in a random pattern.
D They are held together by weak forces of attraction. ( )

5 Which of the following diagrams is most likely to be the arrangement of particles in a lump of melting butter?

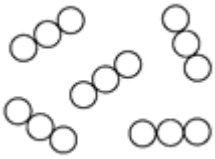
A



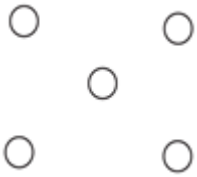
B



C



D



( )

SECTION B : Structured Questions

Answer **ALL** *questions in this section*. *Show your working and write your answers in the space provided*.

1 The melting and boiling points of some substances are given in the table below.

Substance	Melting Point (ºC)	Boiling Point (ºC)
A	–81	400
B	–17	–10
C	46	280
D	87	450
E	1255	2150

(a) Which substance is a gas at room temperature (25 ºC)?

..... **[1]**

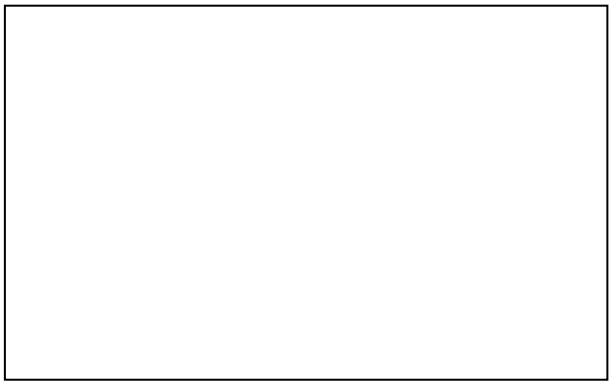
(b) Which substance is a solid at 1100 ºC?

..... **[1]**

(c) Which substance undergoes a change in state when the temperature increases from 0 ºC to 50 ºC?

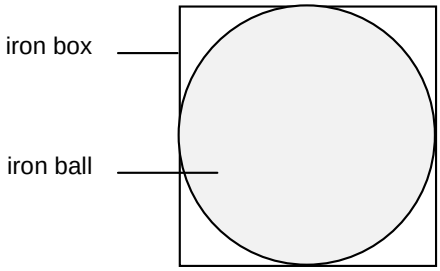
..... **[1]**

(d) Sketch the arrangement of the particles in Substance **D** at room temperature (25 ºC).



[1]

2 An iron ball was taken out of an iron box and strongly heated for ten minutes. After heating, it was found that the heated iron ball could no longer fit into the iron box as shown in the diagram below.



Top view

(a) **(i)** Explain this observation in terms of the movement of particles.

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[4]

(ii) 'The size of the particles of the iron ball becomes bigger when the iron ball is heated.' Do you agree with this statement? Explain your answer.

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[2]

(b) Suggest what can be done so that the hot iron ball can fit into the iron box. Explain your answer.

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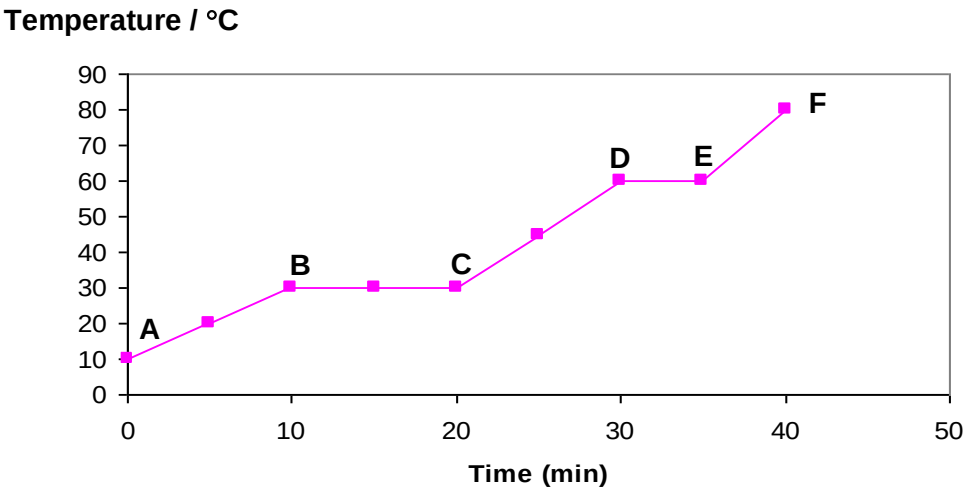
..... **[3]**

3 A solid **W** was heated steadily for 40 minutes. Its temperature varied as shown in the graph.



(a) What is the melting point of **W**?

..... **[1]**

(b) What is the boiling point of **W**?

..... **[1]**

(c) State why the temperature remains constant at **BC**.

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..... **[2]**