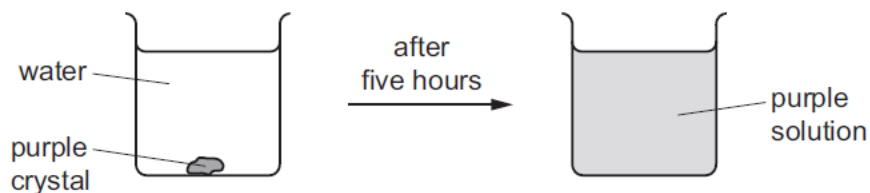


The Particulate nature of matter – 2023 June IGCSE Chemistry 0620

1. June/2023/Paper_0620/11/No.1

The diagram shows the result of dropping a purple crystal into water.



Which processes take place in this experiment?

	chemical reaction	diffusing	dissolving
A	✓	✓	x
B	✓	x	x
C	x	x	✓
D	x	✓	✓

2. June/2023/Paper_0620/12/No.1

Four physical changes of ethanol are listed.

- 1 condensation
- 2 evaporation
- 3 freezing
- 4 boiling

In which changes do the particles move further apart?

- A** 1 and 2 **B** 1 and 3 **C** 2 and 4 **D** 3 and 4

3. June/2023/Paper_0620/13/No.1

Nitrogen is heated in a balloon, which expands slightly.

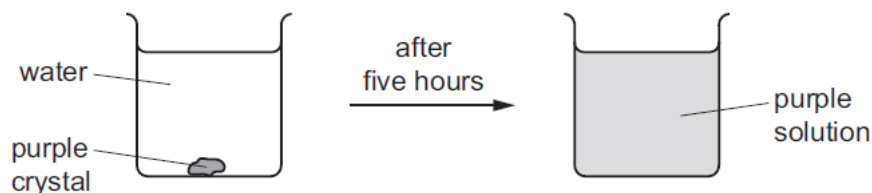
Which statements about the molecules of nitrogen are correct?

- 1 They move further apart.
- 2 They move more quickly.
- 3 They remain the same distance apart.
- 4 Their speed remains unchanged.

- A** 1 and 2 **B** 1 and 4 **C** 2 and 3 **D** 3 and 4

4. June/2023/Paper_0620/21/No.1

The diagram shows the result of dropping a purple crystal into water.



Which processes take place in this experiment?

	chemical reaction	diffusing	dissolving
A	✓	✓	x
B	✓	x	x
C	x	x	✓
D	x	✓	✓

5. June/2023/Paper_0620/22/No.1

Four physical changes of ethanol are listed.

- 1 condensation
- 2 evaporation
- 3 freezing
- 4 boiling

In which changes do the particles move further apart?

- A** 1 and 2 **B** 1 and 3 **C** 2 and 4 **D** 3 and 4

6. June/2023/Paper_0620/23/No.1

Nitrogen is heated in a balloon, which expands slightly.

Which statements about the molecules of nitrogen are correct?

- 1 They move further apart.
- 2 They move more quickly.
- 3 They remain the same distance apart.
- 4 Their speed remains unchanged.

- A** 1 and 2 **B** 1 and 4 **C** 2 and 3 **D** 3 and 4

7. June/2023/Paper_0620/23/No.8

Which row describes the structure of a solid metal and explains the property?

	structure of solid metal	property of solid metal
A	lattice of negative ions in a sea of electrons	conducts electricity because the electrons are free to move
B	lattice of negative ions in a sea of electrons	is malleable because the layers of ions can slide over each other
C	lattice of positive ions in a sea of electrons	conducts electricity because the ions are free to move
D	lattice of positive ions in a sea of electrons	is malleable because the layers of ions can slide over each other

8. March/2023/Paper_0620/12/No.1

The arrangements of particles in solids, liquids and gases are different.

Which statement about the molecules in ice, water or steam is correct?

- A** The H₂O molecules are on average closest together in steam.
- B** The H₂O molecules are on average furthest apart in water.
- C** The H₂O molecules in steam have the second highest average velocity.
- D** The H₂O molecules in ice are able to vibrate.

9. March/2023/Paper_0620/12/No.2

The melting points and boiling points of three elements, at 1 atm pressure, are shown.

	melting point /°C	boiling point /°C
argon	-189	-186
nitrogen	-210	-196
oxygen	-218	-183

Separate samples of argon, nitrogen and oxygen are stored at -200 °C and at 1 atm pressure.

How many samples are liquids?

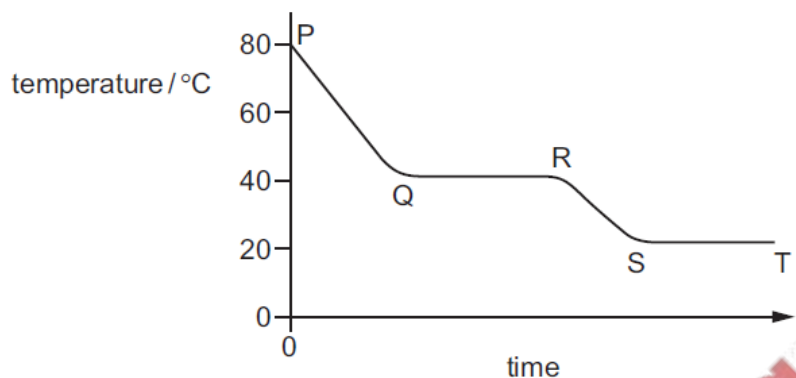
- A** 0
- B** 1
- C** 2
- D** 3

10. March/2023/Paper_0620/22/No.1

Substance M is a solid at 30 °C.

The substance is heated to 80 °C and its temperature measured as it cools down to room temperature.

The cooling curve is shown.



Between which times is substance M freezing?

- A P to Q B Q to R C R to S D S to T

11. March/2023/Paper_0620/22/No.2

Which gas has the fastest rate of diffusion?

- A Ar B C₂H₆ C HCl D H₂S