

MOUNT CARMEL INTERNATIONAL SCHOOL, AKOLA



Cambridge International

Formative Assessment: I

Subject: Science

Date: 29.08.2024

Student's Name: _____ Roll No. _____ Grade: 8

Marks: 40

Time Duration: 90 minutes

Invigilator's Sign.

1. a. Draw a diagram to show the structure of a fluorine ion. (1)

A large empty rectangular box provided for the student to draw a diagram showing the structure of a fluorine ion.

b. The symbol for a fluorine atom is F. What is the symbol for a fluorine ion? (1)

2. When calcium reacts with chlorine the compound calcium chloride is formed. The formula for calcium chloride is CaCl_2 . Calcium has an atomic number of 20 and a mass number of 40. Chlorine has an atomic number of 17 and a mass number of 35.

a. Draw diagram to show the bonding in calcium chloride compound. (4)

A large empty rectangular box provided for the student to draw a diagram showing the bonding in calcium chloride compound.

b. Explain why the formula for calcium chloride is CaCl_2 .

(2)

3. Look carefully at the table and answer the questions.

Substance	Melting point	Boiling point	Solid, liquid or gas at room temperature?	Ionic or simple with covalent bonds
Potassium chloride	770	1500		
Substance X	-182	-161		
Calcium chloride			solid	ionic
ammonia	-77	-34		
Magnesium oxide	2825	3600		
bromine	-7	59		
Substance Y	0	100	liquid	Simple molecules with covalent bonds

a. Calcium chloride is an ionic compound that is solid at room temperature. What does that tell you about its melting and boiling points?

(2)

b. Is substance X a solid, liquid or gas at room temperature?

(1)

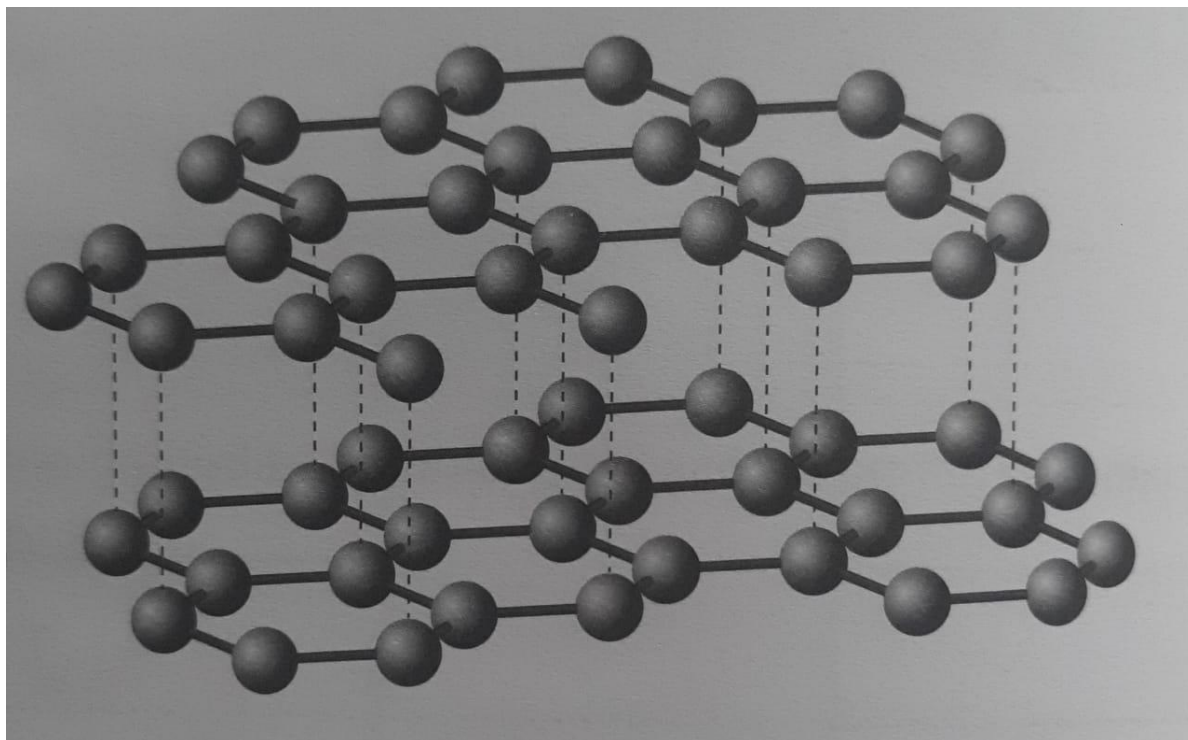
c. List the substances, other than substance Y, that have simple molecules with covalent bonds. (1)

d. Suggest what substance Y is. Give a reason for your suggestion. (2)

e. Which substance, other than substance Y, is a liquid at room temperature. (1)

f. Explain why ammonia has low melting and boiling points. (2)

4. Write the name of the structure (1)



5. Diamond is the hardest material on Earth. Explain how its structure is related to its properties. (2)

6. Zara has four pieces of metal, P-S, each made from a different type of metal. All four pieces have the same mass. The volumes of the pieces are:

P 22 cm³ Q 35 cm³ R 19 cm³ S 27 cm³

Which piece of metal has the greatest density? (1)

Write the letter: _____

7. Arun has some solid blocks with different densities. State how the density of a solid block should compare with water if the block is to float on water. (1)

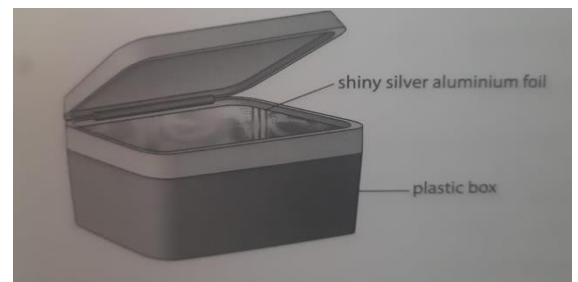
8. A solid cube is made from copper. The lengths of the sides of the cube are 2.0 cm. The mass of the cube is 71.2 g. Calculate the density of the copper. (2)

9. A motorcycle engine uses 2400 J of chemical energy in fuel. The thermal energy changed is 1000 J. The sound energy changed is 600 J. The remaining energy is changed to kinetic for movement. Calculate the quantity of kinetic energy changed by the engine. Show your working. (2)

10. Zara serves two bowls of soup. In one bowl Zara puts 100 cm³ of soup at 60 °C. In the other bowl Zara puts 200 cm³ of soup at 60 °C. Which statements are true? Tick two boxes. (2)

- a. The temperature of the soup in each bowl is different.
- b. The temperature of the soup in each bowl is the same.
- c. The heat in the soup in each bowl is different.
- d. The heat in the soup in each bowl is the same.

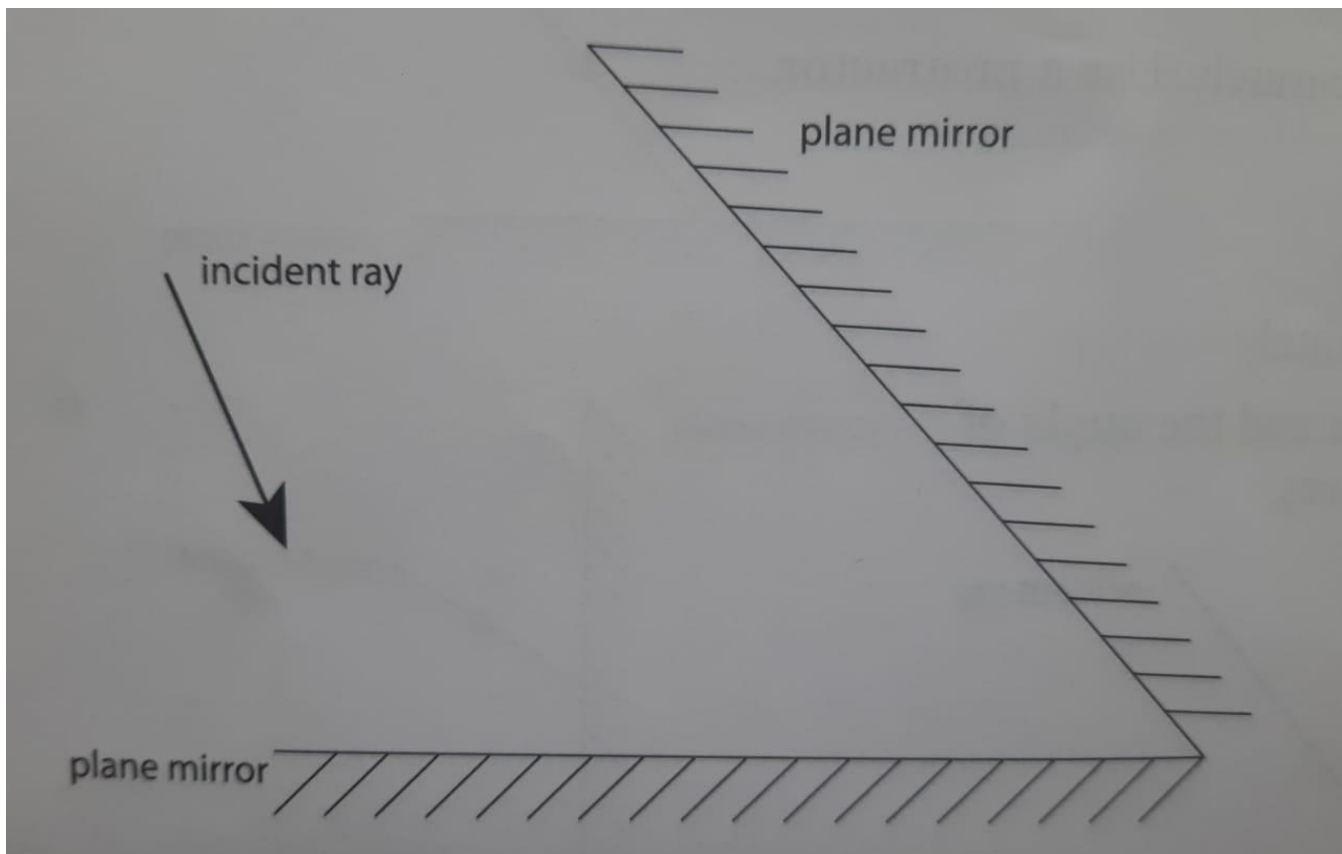
11. A plastic box with shiny silver aluminium foil on the inside can be used to keep food hot. Explain how this works. (2)



12. Humidity is a measure of the quantity of water vapour in air. In conditions of high humidity, evaporation stops. Explain why sweat will not cool the skin in conditions of high humidity. (2)

13. Give a difference between J. J. Thompson's model and Rutherford's model of the structure of the atom. (2)

14. Complete this ray diagram accurately. Show two reflections. Write the angles of incidence and angles of reflection in the spaces below the diagram. (4)



- a. first angle of incidence = _____
- b. first angle of reflection = _____
- c. second angle of incidence = _____
- d. second angle of reflection = _____

15. A white light passes through the blue filter and is made to shine on a green filter. Explain what will happen. (2)
