

**AGA KHAN UNIVERSITY EXAMINATION BOARD**  
**SECONDARY SCHOOL CERTIFICATE**  
**CLASS IX**  
**MODEL EXAMINATION PAPER 2023 AND ONWARDS**  
**Chemistry Paper II**  
**Time: 1 hour 50 minutes    Marks: 25**

**INSTRUCTIONS**

**Please read the following instructions carefully.**

1. Check your name and school information. Sign if it is accurate.

**I agree that this is my name and school.**  
**Candidate's Signature**

**RUBRIC**

2. There are SIX questions. Answer ALL questions. Questions 5 & 6 each offer TWO choices. Attempt any ONE choice from each.
3. When answering the questions:  
  
Read each question carefully.  
Use a black pointer to write your answers. DO NOT write your answers in pencil.  
Use a black pencil for diagrams. DO NOT use coloured pencils.  
DO NOT use staples, paper clips, glue, correcting fluid or ink erasers.  
Complete your answer in the allocated space only. DO NOT write outside the answer box.
4. The marks for the questions are shown in brackets ( ).
5. You may use a simple calculator if you wish.

Q.1. (Total 3 Marks)

An atom of an element **X** has atomic number 12 and mass number 24. It loses 2 electrons from its outer most shell and acquires a +2 charge.

Draw the atomic structure of the ion of element **X**.

**Space for drawing**

Q.2. (Total 3 Marks)

a. Define electronegativity. (1 Mark)

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b. Describe, with a reason, the change in electronegativity across the period in the periodic table. (2 Marks)

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Q.3.

(Total 3 Marks)

There are two similar tea bags. One is placed in a cup of hot water while the other is placed in a cup of cold water.

a. In which cup will the water turn brown more quickly? (1 Mark)

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b. Explain your answer to part a with reference to the movement of particles. (2 Marks)

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Q.4.

(Total 4 Marks)

Give reasons why:

a. Mercury is used in thermometers. (1 Mark)

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b. Silver is used in making jewellery. (1 Mark)

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c. Copper is used to make water pipes. (1 Mark)

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d. Reaction mixture of sodium and water turns red litmus paper to blue. (1 Mark)

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PLEASE TURN OVER THE PAGE

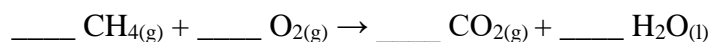
Q.5.

(Total 6 Marks)

**EITHER**

a.

- i. Balance the given chemical equation by inserting numbers where necessary. (1 Mark)

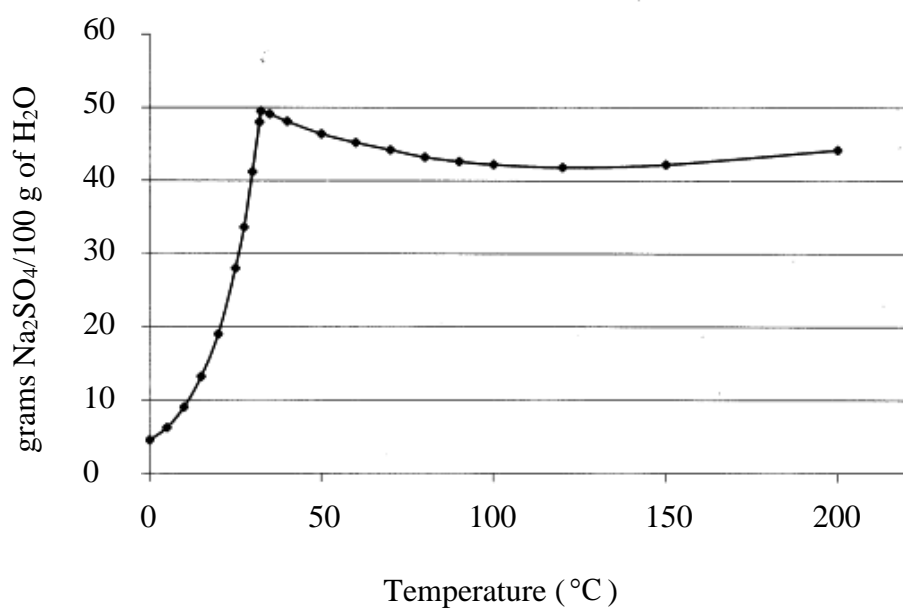


- ii. Calculate the mass of carbon dioxide and water produced on complete combustion of 0.25 mol of methane.

(Note: Molar mass of C = 12 g, O = 16 g and H = 1 g. To solve the numerical, use equation in part i after balancing.) (5 Marks)

**OR**

- b. The given graph represents the effect of temperature on the solubility of sodium sulphate.

**NOT TO SCALE**

With reference to this graph, answer the following questions.

- i. Identify the approximate minimum and maximum solubility of Na<sub>2</sub>SO<sub>4</sub>. (2 Marks)
- ii. Interpret the trend of solubility in this graph. (2 Marks)
- iii. By mentioning the guiding rule of solubility, describe any ONE factor that affects the solubility of any salt. (2 Marks)

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Q.6.

(Total 6 Marks)

**EITHER**

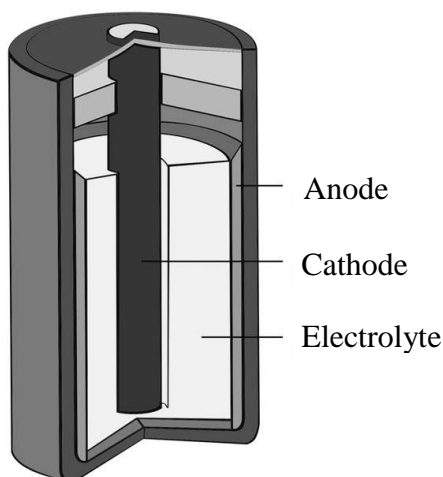
a. Identify and describe the types of bonds and their formation in the following species. Support your answer with the diagrammatic representation of the formation of bond in each species.

(6 Marks)

- i. A water molecule ( $\text{H}_2\text{O}$ )
- ii. A hydronium ion ( $\text{H}_3\text{O}^+$ )

**OR**

b. Given below is a zinc-carbon battery.



- i. What are the anode and cathode made up of in the given dry cell battery? (2 Marks)
- ii. How does the zinc-carbon battery work? Support your answer using balanced chemical equation for the reactions occurring at the anode and the cathode. (4 Marks)

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END OF PAPER

Please use this page for rough work

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