

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX

ANNUAL EXAMINATIONS (THEORY) 2024

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 element **X** of period 3 with atomic mass 27 amu carries 3 electrons in its valence shell.

Calculate its number of electrons, protons and neutrons if atom **X** loses all of its valence electrons.

Q.2. (Total 3 Marks)

Complete the given table by choosing the correct element for each property from the following list.

- Fluorine
- Sodium
- Sulphur
- Carbon
- Oxygen
- Helium

S. No.	Property	Element
1	It produces a basic oxide on reaction with oxygen.	
2	It is an unreactive, colourless gas.	
3	It has an oxidation state of negative one.	

Q.3.

(Total 3 Marks)

a. Describe the movement of particles in liquid state.

(1 Mark)

b. If the liquid is exposed to cold temperatures, what will be the effect on the movement of particles?

(1 Mark)

c. If the same number of particles of a gas and liquid are placed in a container at standard temperature and pressure, then why the volume of the gas is found to be greater than that of liquid?

(1 Mark)

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Q.4.

(Total 4 Marks)

Give a reason why metals

a. have high melting points.

(1 Mark)

b. are good conductors of electricity.

(1 Mark)

c. are malleable and ductile.

(1 Mark)

d. are lustrous.

(1 Mark)

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Q.5.

(Total 6 Marks)

EITHER

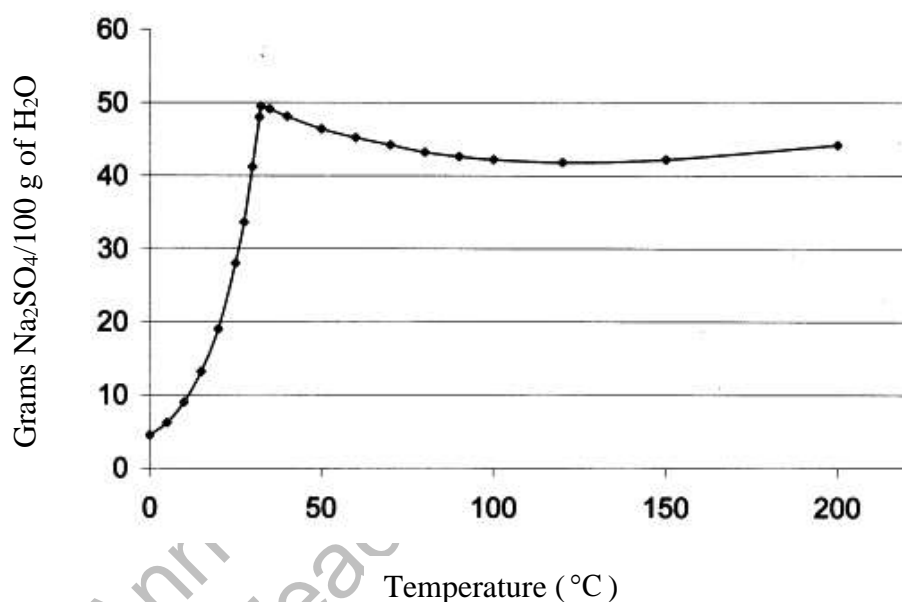
- a. A compound contains 24% carbon, 12% hydrogen and 64% oxygen by mass. The relative molecular mass of this compound is 50.057 g/mol.

- Calculate the empirical formula of the given compound. (4 Marks)
- Determine its molecular formula. (2 Marks)

(Note: Atomic mass of C = 12 amu, H = 1 amu and O = 16 amu)

OR

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



With reference to this graph, answer the following questions.

- Identify the approximate minimum and maximum solubility of Na₂SO₄. (2 Marks)
- Interpret the trend of solubility of Na₂SO₄ depicted in this graph. (2 Marks)
- By mentioning the guiding rule of solubility, describe any ONE factor that affects the solubility of any salt. (2 Marks)

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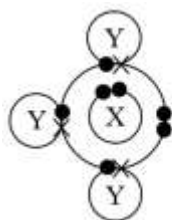
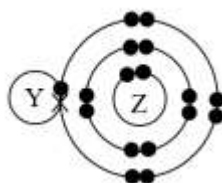
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Q.6.

(Total 6 Marks)

EITHER

- a. Given are the diagrams of two different molecules, **P** and **Q**.

**P****Q**

The following table provides information about each element of these molecules.

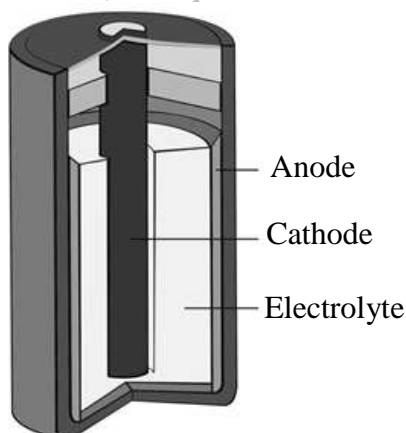
Element	X	Y	Z
Group	5	1	7
Period	2	1	3

Using the given information, answer the following questions.

- i. Identify the molecules, **P** and **Q**. (2 Marks)
- ii. If molecules **P** and **Q** combine chemically, then
 - draw a dot and cross structure to represent the newly formed compound. (1 Mark)
 - name the bond that forms between the two molecules and write any TWO specific characteristics of compounds having this bond. (3 Marks)

OR

- b. Given below is the image of a zinc-carbon battery.



- i. What is 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 equations for the reactions occurring at the anode and the cathode. (4 Marks)

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