AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX

ANNUAL EXAMINATIONS (THEORY) 2025

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)

The atom of an element **X** has 8 neutrons, 8 protons and 8 electrons.

a. Identify element **X**. (1 Mark)

_____

_____

b. If the element **X** forms an ion $\mathbf{X}^{-2}$, then how many valence electrons will this ion contain? (1 Mark)

_____

_____

c. An isotope of this element **X** has mass number 18. How many neutrons are there in an atom of this isotope? (1 Mark)

Number of Neutrons: _____

Q.2. (Total 3 Marks)

a. Define the term, 'electron affinity'. (1 Mark)

_____

_____

b. Describe, with a reason, the trend of electron affinity within a group of the periodic table. (2 Marks)

_____

_____

_____

_____

Q.3. (Total 3 Marks)

a. Which has a higher boiling point, oxygen gas or liquid water? (1 Mark)

b. Give reasons with reference to both oxygen gas and liquid water to support your answer to part a. (2 Marks)

Q.4. (Total 4 Marks)

Explain why the

a. first ionisation energy decreases down the group of alkali metals. (2 Marks)

b. second ionisation energy of sodium is higher than that of magnesium. (2 Marks)

Q.5. (Total 6 Marks)

EITHER

a. In each of the given cases, provide a balanced chemical equation and describe any TWO characteristics of a chemical reaction that occurs between:

i. Zinc granules and dilute sulphuric acid (3 Marks)

ii. Calcium oxide (quicklime) and water (3 Marks)

OR

b. You have a solution of copper(II) sulphate in water. You want to obtain pure, solid copper(II) sulphate from it.

i. Describe why the technique of filtering copper(II) sulphate solution will not work. (1 Mark)

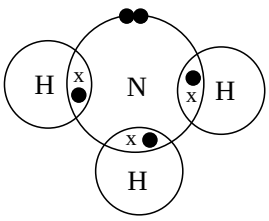
ii. Which method will you use instead? Give a reason to support your answer. (2 Marks)

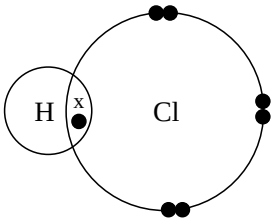
iii. Describe how you will obtain pure, solid copper(II) sulphate in THREE steps using the method identified in part ii. (3 Marks)

Q.6. (Total 6 Marks)

EITHER

a. Given below are the dot and cross structures of ammonia and hydrogen chloride. These two molecules on combining form ammonium chloride.





i. Name the bond that joins nitrogen of ammonia and hydrogen of hydrogen chloride. (1 Mark)

ii. Describe the formation of ammonium chloride. (2 Marks)

iii. Write THREE differences between the bond identified in part i and the one that already exists between nitrogen and hydrogen in ammonia. (3 Marks)

OR

b. Describe any SIX features of a voltaic cell (Galvanic cell). (6 Marks)

END OF PAPER

Please use this page for rough work