

**AGA KHAN UNIVERSITY EXAMINATION BOARD**

**SECONDARY SCHOOL CERTIFICATE**

**CLASS IX**

**MODEL EXAMINATION PAPER 2018**

**Chemistry Paper II**

**Time: 2 hours 15 minutes    Marks: 35**

**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 EIGHT questions. Answer ALL questions. Questions 7 & 8 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 4 Marks)

Chlorine has two isotopes, Cl-35 and Cl-37. The percentage abundance of Cl-35 is 75% and that of Cl-37 is 25%.

- a. Differentiate between the given isotopes, i.e. Cl-35 and Cl-37 on the basis of their atomic structure. (1 Mark)

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- b. Using the given information, calculate the relative atomic mass ( $A_r$ ) of chlorine. (3 Marks)

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Q.2.

(Total 4 Marks)

a. Draw dot and cross diagram for the substances in the given table.

(2 Marks)

Substance	Dot and Cross Diagram
Nitrogen gas	
Carbon dioxide gas	

b. 150 cm<sup>3</sup> of an aqueous sodium chloride solution contains 3 g sodium chloride. Calculate the mass/volume percentage of the given solution.

(2 Marks)

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Q.3. (Total 4 Marks)

Describe with reasons,

a. the change in electronegativity across the period in the periodic table. (2 Marks)

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b. the trend in shielding effect when going down a group of the periodic table. (2 Marks)

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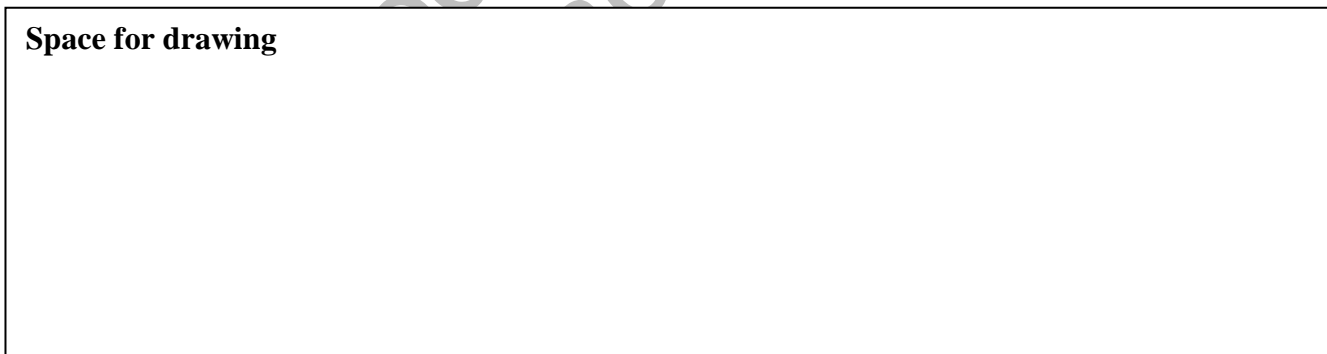
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Q.4. (Total 3 Marks)

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.5.

(Total 3 Marks)

- a. 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.

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

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- ii. Explain your answer to part i with reference to the movement of particles. (2 Marks)

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Q.6.

(Total 3 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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Q.7.

(Total 7 Marks)

**EITHER**

a. Name and describe the types of bonds and their formation in the following species. (7 Marks)

I. A water molecule ( $\text{H}_2\text{O}$ )

II. A hydronium ion ( $\text{H}_3\text{O}^+$ )

**OR**

b. Differentiate between

i. unsaturated and supersaturated solutions. (2 Marks)

ii. a colloid and a suspension on the basis of the following properties. (5 Marks)

I. Particle size

II. Visibility

III. Filterability

IV. Sedimentation

V. Effect of light

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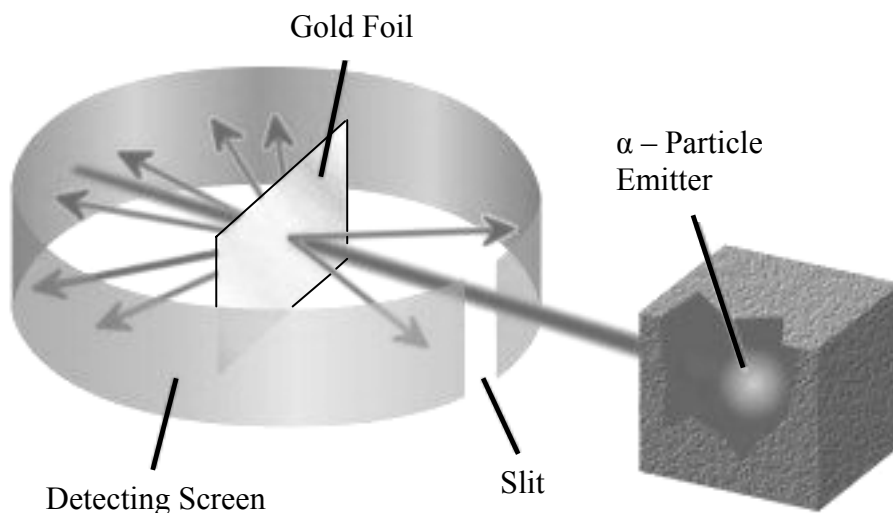
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Q.8.

(Total 7 Marks)

**EITHER**

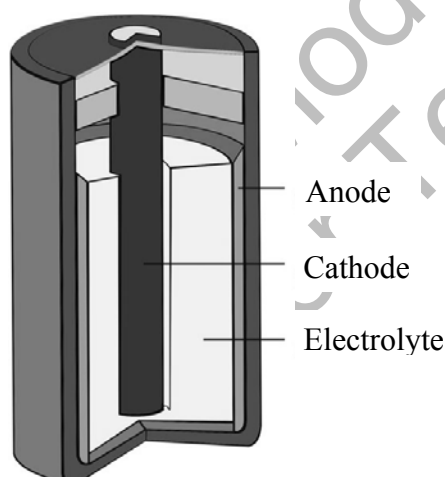
- a. In 1911, a scientist proposed planetary model for an atom based on the given illustration of gold foil experiment.



- i. Name the scientist who carried out the gold foil experiment. (1 Mark)
- ii. Based on the given experiment, describe any FOUR main points of the planetary model of the atom as concluded by the scientist identified in part i. (4 Marks)
- iii. Mention the TWO fundamental defects in the planetary model of the atom. (2 Marks)

**OR**

- b. Given below is a zinc-carbon battery.



- i. What are the anode, cathode and electrolyte made up of in the given dry cell battery? (3 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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