

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X EXAMINATION

MAY 2016

Chemistry Paper II

Time: 2 hours 25 minutes Marks: 40

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**

2. **RUBRIC.** There are TEN questions. Answer ALL questions. Questions 9 & 10 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.

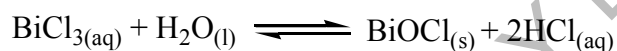
Q.1. (Total 3 Marks)

Respiration is an example of thermochemical reactions which occurs in living organisms.

Select correct words from the given list to describe the type of energy change that takes place in respiration.

break bonds	greater	temperature increases	energy absorbed	reactants
make bonds	lesser	temperature decreases	energy released	products

Q.2. (Total 3 Marks)



i. What does the double headed arrow indicate in a chemical equation? (1 Mark)

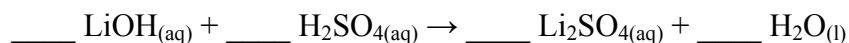
ii. Predict the effect on the concentration of BiOCl if a small amount of HCl is added to the reaction mixture. Give a reason to support your answer. (2 Marks)

Q.3.

(Total 3 Marks)

The neutralisation of 20 cm³ of 4 M sulphuric acid (H₂SO₄) by 18 cm³ of lithium hydroxide (LiOH) was carried out in a laboratory using titration.

- i. Balance the chemical equation for the given neutralisation reaction. (1 Mark)



- ii. Using your balanced chemical equation, calculate the molarity of lithium hydroxide solution. Show the steps of working clearly. (2 Marks)

Q.4.

(Total 3 Marks)

- i. What is meant by the term homologous series? (1 Mark)

- ii. State the general formula for alkanes and alkynes. (2 Marks)

Alkanes:

Alkynes:

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Q.5.

(Total 3 Marks)

Below are a few statements regarding fats and oils. Identify THREE correct statements and write TRUE against them.

	True/ False	Statements
A		Oils are unstable and can easily be oxidised at a high temperature.
B		Fats can be hydrogenated.
C		Oils are denser than water.
D		Fats are usually obtained from animal sources.
E		Oils are saturated with maximum possible number of hydrogen atoms attached to carbon atoms.
F		Fats contain higher amounts of long chain saturated fatty acids.

Q.6.

(Total 3 Marks)

Two beakers, labelled as **A** and **B**, contain two different carbohydrates. The carbohydrate in beaker **A** dissolves only in hot water while the carbohydrate in beaker **B** easily dissolves in cold water.

i. Which beaker contains sugar and which one has starch? (1 Mark)

ii. Why can one of the carbohydrates dissolve in hot water only? (1 Mark)

iii. Name the simplest form of carbohydrates. (1 Mark)

Q.7.

(Total 4 Marks)

An ion exchanger is used domestically as well as on an industrial scale to make hard water soft.

- i. Which type of hardness in water does it remove? (1 Mark)

- ii. Name the resin commonly used in ion exchanger. (1 Mark)

- iii. What happens during the process of removing hardness from water? (1 Mark)

- iv. How can an ion exchange resin be renewed? (1 Mark)

Q.8.

(Total 3 Marks)

Aluminium is extracted by the electrolysis of bauxite (Al_2O_3) using Hall Heroult process.

- i. Write the ion-electron equation for the formation of aluminium. (1 Mark)

- ii. Bauxite is dissolved in molten cryolite for electrolysis. What is the purpose of using molten cryolite as a solvent? (1 Mark)

- iii. Carbon anodes are used up gradually and are frequently replaced by new ones. How are carbon anodes burnt during electrolysis? (1 Mark)

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EITHER

- OR**

- b. Write a balanced chemical equation to show the following chemical reactions.
- Preparation of methane by
 - reduction of methyl bromide in the presence of zinc metal and dilute hydrochloric acid.
 - boiling aluminium carbide with water.
 - Combustion of methane in the presence of air
 - Thermal decomposition of methane in the absence of air

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Q.10.

(Total 7 Marks)

EITHER

- a. Describe the phenomenon of global warming with reference to its process and THREE of its effects on the environment.

OR

- b. Following are two types of water pollutants.

- i. Non-biodegradable detergents
- ii. Heavy metals

Describe separately how these enter into water bodies and cause water pollution. Mention any THREE effects of water pollution on the environment.

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