

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X EXAMINATION

MAY 2013

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**

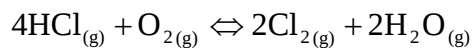
2. RUBRIC. There are SIX questions. Answer ALL questions. Questions 5 & 6 each offer TWO choices. Attempt any ONE choice from each.
3. When answering the questions:

Read each question carefully.
Use a black 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 6 Marks)

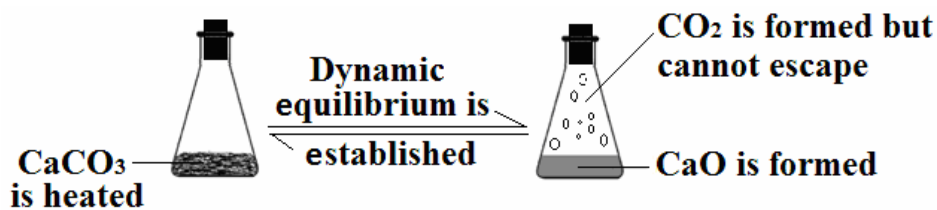
- a. Write the equilibrium constant expression and derive its unit for the given reaction. (4 Marks)



- b. Decomposition of calcium carbonate (CaCO_3), as shown in the given figure, is an example of dynamic equilibrium.

Which TWO features of the given reaction show that the system is in dynamic equilibrium?

(2 Marks)



Q.2.

(Total 6 Marks)

- a. A man suffering from burning sensation throughout the gastrointestinal tract drank magnesium hydroxide solution for its cure.

Why did the man prefer drinking magnesium hydroxide solution? What will be its effect?

(2 Marks)

- b. Complete the following table with structural and condensed formulae of the given organic compounds. (4 Marks)

Name	Molecular Formula	Structural Formula	Condensed Formula
Pent-1-ene	C ₅ H ₁₀		
Pent-2-ene	C ₅ H ₁₀		

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Q.3. (Total 6 Marks)

- a. What are proteins? Show with the help of a chemical equation how a peptide linkage occurs in a protein molecule. (3 Marks)

Space for equation

- b. Is vitamin E a water soluble or a fat soluble vitamin? Write its TWO uses. (3 Marks)

Q.4.

(Total 7 Marks)

- a. The given picture shows an environmental issue. Describe the human activities and their effects that have caused this situation. (3 Marks)



- b. How is permanent hardness of water removed using washing soda? (2 Marks)

- c. List any TWO industries where a student can find working opportunities as an organic chemist. (2 Marks)

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Q.5.

(Total 8 Marks)

EITHER

- a. What is meant by molarity (M) and neutralization? In a titration, 15 cm^3 of 0.5 M dilute sulphuric acid is completely used to neutralize 10 cm^3 of sodium hydroxide solution. Calculate the molarity of sodium hydroxide solution with the help of a balanced chemical equation.

OR

- b. Show the preparation of alkanes using following methods. Also write chemical equations and the necessary conditions for each method.
- Hydrogenation of alkenes and alkynes
 - Reduction of alkyl halides

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Q.6. (Total 7 Marks)

EITHER

- a. Define the term 'air pollutant' and give TWO examples. Also suggest ways by which the government can control air pollution by automobiles.

OR

- b. Describe synthetic and natural fertilizers. Also discuss any THREE benefits of natural fertilizers.

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