

**AGA KHAN UNIVERSITY EXAMINATION BOARD**

**SECONDARY SCHOOL CERTIFICATE**

**CLASS X EXAMINATION**

**APRIL/ MAY 2017**

**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)

a. State ONE condition necessary to establish equilibrium in a chemical reaction. (1 Mark)

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b. Name TWO features that remain constant at equilibrium. (2 Marks)

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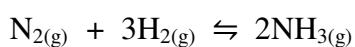
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Q.2. (Total 3 Marks)

Consider the given reaction at equilibrium.

Enthalpy change ( $\Delta H$ ) =  $-92 \text{ kJ mol}^{-1}$ 

Complete the table by using appropriate words from the given list to show the change in concentration of hydrogen and ammonia and the direction of equilibrium.

- Increases
- Decreases
- No change
- Left
- Right

| Stress                         | Effect            |                    |                   |
|--------------------------------|-------------------|--------------------|-------------------|
|                                | [H <sub>2</sub> ] | [NH <sub>3</sub> ] | Equilibrium shift |
| [N <sub>2</sub> ] is increased |                   |                    |                   |

Q.3.

(Total 3 Marks)

a. Write any TWO industrial uses of sulphuric acid.

(2 Marks)

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b. Why is aqueous solution of hydrogen chloride acidic in nature?

(1 Mark)

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Q.4.

(Total 3 Marks)

Complete the given table with the missing information regarding detection of functional groups.

| Reaction in Test Tube   | Result  | Functional Group  |
|---|---|---|
| 2.0 cm <sup>3</sup> of 5% NaHCO <sub>3</sub> + a pinch of organic compound                        | Carbon dioxide gas evolves with effervescence |   |
| Equal volumes of Fehling's solution A and B + a pinch of organic compound + boil for five minutes |   | $\begin{array}{c} \text{O} \\ \parallel \\ \text{---C---H} \end{array}$ |
|   | Formation of violet-purple solution           | $\begin{array}{c} \text{OH} \\   \\ \text{C}_6\text{H}_5 \end{array}$   |

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Q.5. (Total 3 Marks)

Fill in the blanks.

- a. Proteins are made up of amino acids which are joined together through \_\_\_\_\_.
- b. When heated, proteins vibrate violently causing the \_\_\_\_\_ bonds to break.
- c. Denaturation brings about a change in the \_\_\_\_\_ of proteins.

Q.6. (Total 3 Marks)

Nucleic acids are of two types: DNA and RNA.

- a. What does DNA stand for? (1 Mark)

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- b. Describe the structure of DNA. (2 Marks)

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Q.7.

(Total 3 Marks)

- a. A student took environmental chemistry as a subject to study. What do you think he will study in this branch of chemistry? (1 Mark)

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- b. When fossil fuels burn, oxidation of sulphur takes place and sulphur dioxide is formed. Sulphur dioxide reacts with rain in air and falls to Earth as acid rain.

Describe any TWO damages that acid rain can cause. (2 Marks)

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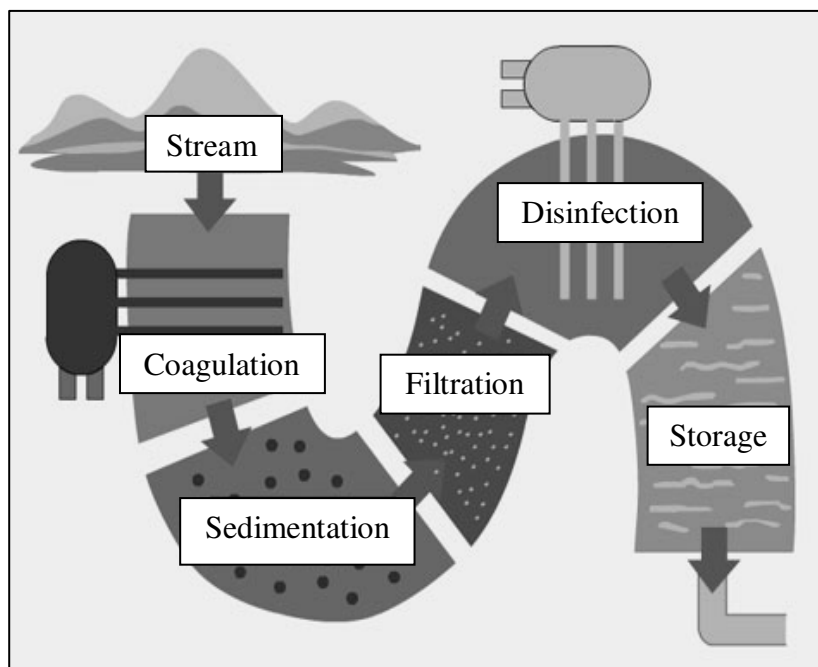
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Q.8.

(Total 4 Marks)

The given diagram shows the stages involved in raw water treatment.



- a. Name the chemical which is added in the coagulation stage to stick the smaller solid particles together. (1 Mark)

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- b. What is the basic purpose of treating water with slaked lime (calcium hydroxide) before it enters the sedimentation tank? (1 Mark)

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- c. Why is water filtered through charcoal (carbon) in the filtration stage? (1 Mark)

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- d. Which chemical is used for disinfecting water? (1 Mark)

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**EITHER**

- a. Sana is a farmer. She cares about the environment and the health of her family. She uses some of her produce and sells the rest as ‘Sana’s Organic Products’.
- i. Which type of fertiliser should she use? Justify your answer giving any THREE advantages of using it. (4 Marks)
- ii. What problems (any THREE) would she face while using this fertiliser? (3 Marks)

**OR**

- b.
- Name the man-made chemical substance that causes ozone depletion. (1 Mark)
  - Using balanced chemical equations, illustrate the destruction of the ozone layer. (3 Marks)
  - Write any THREE harmful effects of ozone. (3 Marks)

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Please use this page for rough work

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