

S.S.L.C. EXAMINATION, MARCH-2012
CHEMISTRY

Time : 1½ Hours

Total Score : 40

Instructions :

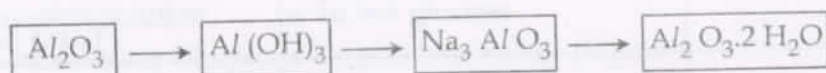
- Answer all questions.
- First 15 minutes are given as 'cool off time' in addition to 1½ hours. Use this time to read and understand the questions.
- Answer the questions only after reading and understanding the questions thoroughly.
- Manage the time to answer the questions.
- Score for each question is given against each question.
- Questions with choice are included for such questions answer only one question.
- Write the question numbers for main and subquestions correctly.

- | | Score |
|--|-------|
| 1. A d-block element iron (Fe) forms two types of compounds, FeSO_4 and $\text{Fe}_2(\text{SO}_4)_3$. | |
| (a) Which of these compounds contains ferric (Fe^{3+}) ion ? | 1 |
| (b) What is the number of electrons present in the d - subshell of Fe^{3+} ion ? Find out by writing the subshell electronic configuration. | 2 |
| [Given : Atomic number of Fe is 26] | |
| 2. Two chemical reactions are given : | |
| (i) Sulphur dioxide combines with Oxygen to form Sulphur trioxide. | |
| (ii) Sodium reacts with water. | |
| (a) Write the balanced chemical equation for any one of the above reactions | 1 |
| (b) Which of the above reaction is a reversible reaction ? | 1 |
| (c) What is the effect of pressure and temperature on this reversible reaction ? Give reason. | 2 |

3. Alnico is an alloy used to make permanent magnets.

(a) Which is the metal present in Alnico in addition to iron, nickel and cobalt ? 1

(b) Compounds in the process of extraction of aluminium are given 1



If there is any mistake in the order of the compounds, write them in the correct order.

(c) "To extract Al from its ore, carbon is not used as a reducing agent". Justify the statement. 1

4. [This question has choice. Write answer for any one question]

Some data about three gases at STP are given :

(A) 16 g CH_4

(B) 11.2 L CO_2

(C) 6.022×10^{23} molecules of NH_3 .

(a) The number 6.022×10^{23} is known as _____. 1

(b) Calculate the number of CH_4 molecules present in 16 g CH_4 1

(c) Arrange A, B and C in the increasing order of mass in gram. 2

[given : At mass : H = 1, C = 12, N = 14, O = 16]

OR

A, B and C are three cylinders of volume 11.2 L each. H_2 , O_2 and N_2 gases at STP are filled in A, B and C respectively.

(a) Find the number of moles of H_2 molecules in A. 1

(b) Calculate the number of molecules of O_2 present in B. 1

(c) If the volume of N_2 present in C is doubled at STP, calculate the mass in gram of N_2 gas. 2

[given : Molar volume at STP = 22.4 L, At. mass : H = 1, O = 16, N = 14]

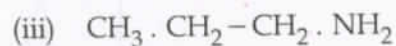
5. Subshell electronic configuration of elements P, Q and R are given.

[P, Q and R are imaginary symbols]



- (a) One of these electronic configurations given above is wrong. Which is the element ? 1
- (b) Out of P, Q and R, which has highest electronegativity ? 1
- (c) Can P and Q join to form an ionic compound ? Justify your answer. 2

6. Given below are some organic compounds containing certain functional groups.



- (a) Write the names of functional group of any of the two compounds given above. 1
- (b) Write the IUPAC name of $\text{CH}_3 \cdot \text{CH}_2 \cdot \text{CH}_2 \cdot \text{OH}$. 1
- (c) Give the structural formula and IUPAC name of functional group isomer of $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{OH}$. 2

3.

7. Two group of students (A and B) are conducting two experiments

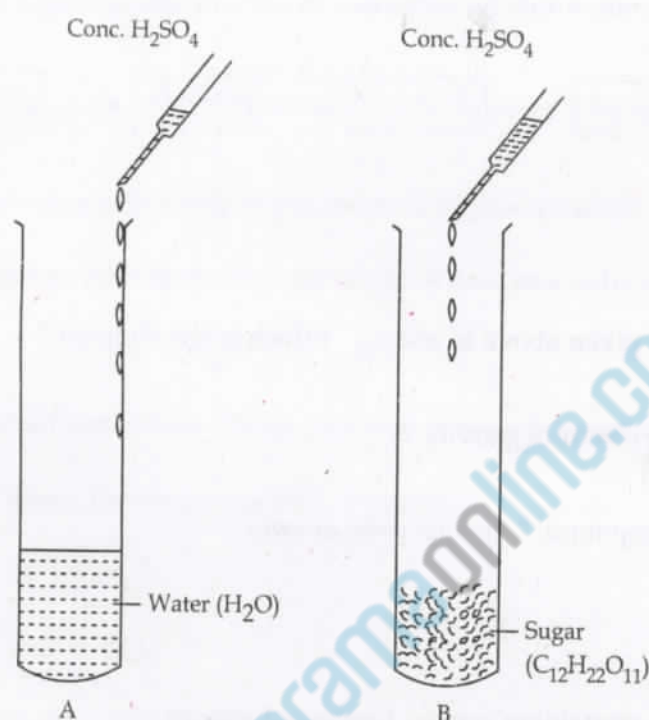
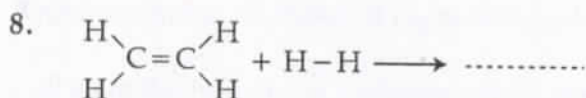


Fig. 1

- (a) Write true or false :

"The experiment which is conducted by group A is related to the chemical property of H₂SO₄"

- (b) Instead of sugar if common salt (NaCl) is taken in the test tube in the experiment of group B, which acid will form ?



- (a) Complete the reaction

- (b) Name the product formed if a large number of CH₂=CH₂ molecules are added instead of H-H.

9. Mg, Al, Zn, Fe and Ag are metals of reactivity series :

- (a) Which of these metal shows highest reactivity ? 1
- (b) If an electrochemical cell is devised by dipping Fe in FeSO_4 solution and Ag in AgNO_3 solution, which electrode is acting as cathode ? Give reason. 2

10. Substances used in two different projects done by the members of a science club are given in the table :

Project - 1	Project - 2
<ul style="list-style-type: none"> • Ethanoic acid • Ethanol • Concentrated sulphuric acid • Water 	<ul style="list-style-type: none"> • Coconut oil • Sodium hydroxide • Water

- (a) In which project (Project - 1 or Project - 2) a compound with pleasant fruity smell is formed ? 1
- (b) How will you distinguish between distilled water and hard water by using the precipitate formed in project - 2 ? 2

11. Given below is the part of a graph

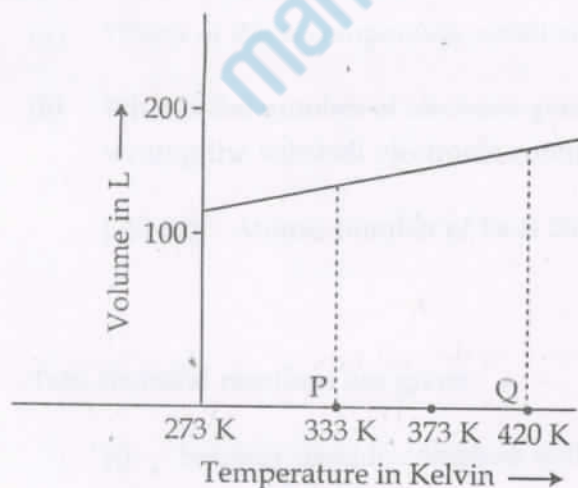


Fig. 2

- (a) Which gas law is related to this graph ? 1
- (b) Convert the values of temperature at 'P' and 'Q' given in Kelvin scale (K) to degree celsius scale ($^{\circ}\text{C}$). 1
- (c) Calculate the temperature in Kelvin scale at which volume of a gas at 50°C becomes double (Hint : in both situations pressure is same) 2

12. Some substances and their uses are given in the table : Match them suitably.

Substance	Use
• Antacids	• Pesticide
• Benedicts solution	• To test glucose
• Thermosetting Plastics	• To give blue colour to glass
• Cobalt Oxide	• To make switch board
• Tobacco extract	• To reduce acidity

13. 2011 is the International year of chemistry. "Chemistry is our life, our future", is the motto. "Chemistry is not a problem but a solution" is the message of green chemistry. Explain the relevance of this message.

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