S.S.L.C. EXAMINATION, MARCH - 2015
CHEMISTRY (English)

Time : 1½ Hours | Total Score : 40

Instructions :

1) There are 14 questions in this question paper.
2) Score for each question is given against it.
3) Put correct question numbers for each question and subquestions.
4) Questions with choice are given. Write answer to only one question.
5) First 15 minutes are given as "Cool-off Time" in addition to 1½ hours. Use this time to read and understand the questions.

[SCORE]

Q1) The impurities which are not removed during ore concentration are called _____ [1]

(gangue, flux , slag)

Q2) Correct wrong statements if found any from those given below: [2]

a) When the difference in electronegativity increases, the possibility of covalent bonding increases
b) Electronegativity increases while moving from left to right along a period
c) Iconic bond is present in HCL molecule
d) Partial iconic bond is also there in polar molecule

Q3) The volume of a definite amount of hydrogen gas taken at 2 atm pressure 25° temperature is 400 mL

a) Suggest a method to increase the volume of this gas without change in pressure. [1]

b) If the volume of the gas is changed to 200 mL, what will be the new pressure? [2]

(Hint : Temperature is constant)

c) State the gas law used to solve the problem (b). [1]

Q4) Sugar taken in a watch glass was found to be charred by adding a substance "X".

a) What is the substance 'X'? [1]

b) What is the reason for charring of sugar? [1]

c) Which catalyst is used in the industrial preparation of the substance 'X'? [1]

OR

Chemical equation of the industrial preparation of SO_3 is given.

$$2\ SO_2 + O_2 \rightleftharpoons 2SO_3 + \text{Heat}$$

What is the influence of the following factors in this system at equilibrium.

a) Increasing the amount of O_2. [1]

b) SO_3 is removed from the system. [1]

c) Decreasing the temperature. [1]

Q5) Some equipment and materials are given:

$ZnSO_4$ solution, $CuSO_4$ solution,

Zn rod, Cu rod, Volt meter,

KCl solution, filter paper

a) Draw the diagram of the electrochemical cell which can be constructed using these equipments and materials and label the parts. [2]

b) Write equations of chemical reactions taking place in the two electrodes of this cell. [2]

(Hint : reactivity Zn > Cu)

Q6) Match the items given in column A and column B [2]

A	B
– OH	Amine.
– COOH	Alcohol.
– NH_2	Aldehyde.
– CHO	Carboxylic acid.

Q7)

A small amount of MnO_2 is added to H_2O_2 taken in a test tube.

a) Suggest an experiment to identify the gas liberated. [1]

b) Write the chemical equation of the reaction taking place. [1]

c) What is the role of MnO_2 in this chemical reaction? [1]

OR

Equations of two chemical reactions are given

$$H_2 + Cl_2 \longrightarrow 2HCl$$

$$CaCO_3 + 2HCl \longrightarrow CaCl_2 + CO_2 + H_2O$$

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Equations of two chemical reactions are given

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Explain the reason for the following situations using collision theory.

a) When pressure decreases, the speed of formation of HCl decreases. [1]

b) When the particle size of $CaCO_3$ decreases speed of chemical reaction increases. [1]

c) All collisions between reactant molecules are not leading to a chemical reaction. [1]

Q8)

Equal amount of NaOH solution is added to aqueous solutions of ferric sulphate and ferrous sulphate taken in two different test tubes. Precipitates of two different colours can be seen in these test tubes.

a) Which compounds are responsible for different colours? [1]

b) Write the sub shell electronic configuration of ferric ion. [1]

(Hint : atomic number of iron - 26)

c) Why do iron form compounds with two different valencies? [1]

Q9) Find out to which type of chemical reaction, the following changes belong: **[2]**

(Substitution reaction, addition reaction, polymerisation, thermal cracking)

a) Methane $\longrightarrow$ Chloromethane

b) Propene $\longrightarrow$ Polypropene

c) Hexane $\longrightarrow$ Butene + ethane

d) Ethane $\longrightarrow$ 1, 2 – dichloroethane

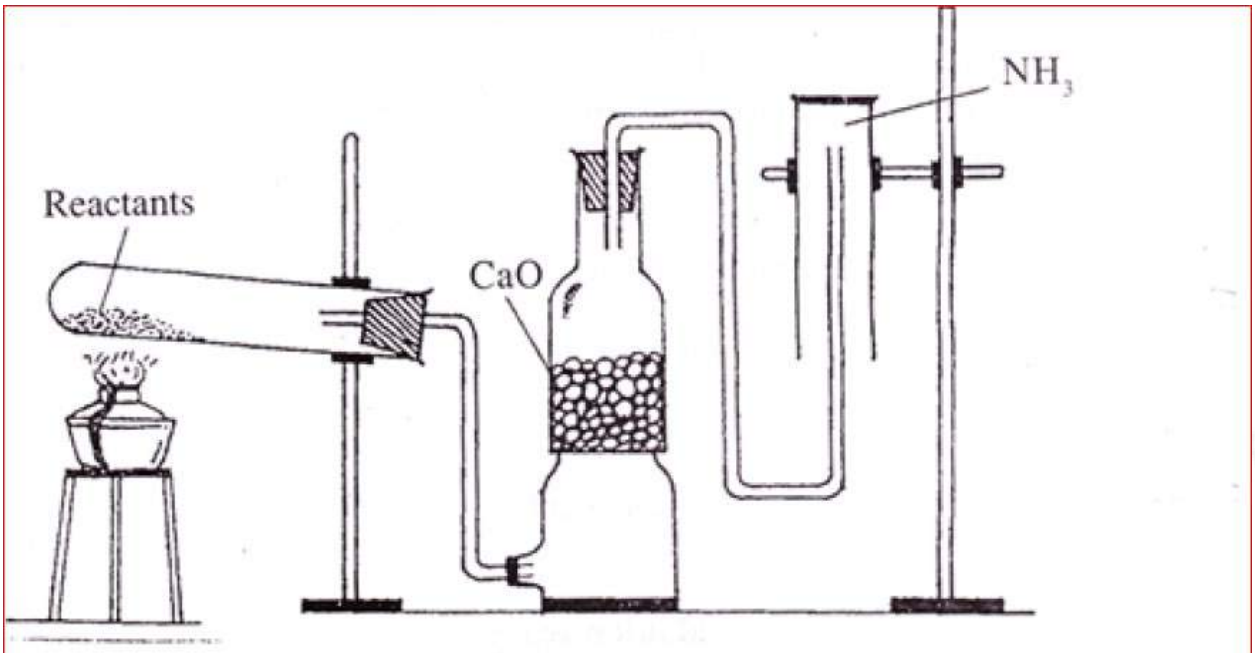
Q10) Chemical equation for the reaction between ethane gas oxygen is given below.

$$2\ C_2H_6 + 7\ O_2 \longrightarrow 4\ CO_2 + 6\ H_2O$$

a) How many moles of ethane should react to form 20 mole CO_2? **[1]**

b) How many molecules are present in 67.2 L ethane at STP? **[2]**

Q11) The diagram showing the laboratory preparation of NH_3 is given below



a) What are the reactants used? [1]

b) Why CaO is used? [1]

c) What is the reason behind not keeping the jar in the upward direction? [1]

d) Write an experiment to identify the presence of NH_3 in the gas Jar. [1]

Q12) Butan-l-ol and methoxy propane are isomers. Their structural formulae are given:

$CH_3 - CH_2 - CH_2 - CH_2 - OH$

$CH_3 - CH_2 - CH_2 - O - CH_3$

a) To which type of isomerism this belongs? [1]

b) Write the structural formula and IUPAC name of the chain isomer of butan–1–ol. [2]

Q13) Equations of preparation of alcohol from sugar are given:

$$C_{12}H_{22}O_{11} + H_2O \xrightarrow{\text{invertase}} \underset{A}{C_6H_{12}O_6} + \underset{B}{C_6H_{12}O_6}$$

$$C_6H_{12}O_6 \xrightarrow{\text{zymase}} 2\,C_2H_5OH + 2\,CO_2$$

Alcohol

a) Write the names of Compounds A and B. [1]

b) The alcohol obtained here is known as _____. [1]

c) How can this alcohol be converted into rectified spirit? [1]

d) How can power alcohol be prepared? [1]

Q14) It is necessary to ban the use of chemical pesticides to protect the environment. Explain your response to the statement with a suitable example. [2]

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