

| Version No. | | | |
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Answer Sheet No. _____

Sign. of Candidate _____

Sign. of Invigilator _____

CHEMISTRY SSC-II

SECTION – A (Marks 12)

Time allowed: 20 Minutes

Section – A is compulsory. All parts of this section are to be answered on this page and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. **Do not use lead pencil.**

Q.1 Fill the relevant bubble for each part. Each part carries one mark.

- Which one of the following compounds is formed by the reaction of Aluminium Hydroxide $\text{Al}(\text{OH})_3$ with Sulphuric Acid (H_2SO_4)?

| | |
|---------------------------------|-----------------------------|
| A. $\text{Al}(\text{SO}_4)_3$ | B. Al_2CO_3 |
| C. $\text{Al}_2(\text{SO}_4)_3$ | D. AlCl_3 |
- Marble Buildings are disintegrated by acid rain because of the reaction of acid with:

| | |
|----------------------|--------------------|
| A. Calcium Sulphate | B. Calcium Nitrate |
| C. Calcium Carbonate | D. Calcium Oxalate |
- Dipeptide is formed by joining of two molecules of:

| | |
|---------------------|-------------|
| A. Amino acids | B. Alcohols |
| C. Carboxylic acids | D. Amines |
- Two products obtained from the carbonating tower during the Solvay Process are:

| | |
|--|---|
| A. NH_4Cl and CO_2 | B. NH_4HCO_2 and NH_4Cl |
| C. NaHCO_3 and NH_4Cl | D. NaHCO_3 and NH_3 |
- The end product of the reaction of acetylene with concentrated alkaline KMnO_4 is oxalic acid. In this reaction acetylene undergoes:

| | |
|-----------------|------------------|
| A. Reduction | B. Oxidation |
| C. Substitution | D. Rearrangement |
- One mole of an unsaturated hydrocarbon reacts with one mole of hydrogen to form a saturated compound. Predict the formula of unsaturated compound.

| | |
|------------------------------|------------------------------|
| A. C_3H_4 | B. C_6H_{12} |
| C. C_4H_{10} | D. C_7H_{16} |

- (7) F^- is a base, because it:
- A. Contains OH group
 - B. Ionizes in water to give OH^- ions
 - C. Can accept an election pair
 - D. Can accept proton
- (8) Which one of the following compounds is an aldehyde?
- A. $CH_3 - CH_2 - OH$
 - B. $CH_3 - COOH$
 - C. $CH_3 - CHO$
 - D. $CH_3 - COCH_3$
- (9) The pH of $10^{-3}M$ aqueous solution of NaOH is:
- A. 3
 - B. 11
 - C. 2
 - D. 9
- (10) Which one of the following pollutant is **NOT** produced by the burning of fossil fuel?
- A. CO
 - B. NO_x
 - C. CFC_s
 - D. SO_x
- (11) For a reversible reaction given below the unit of Kc is:
- $$2SO_2 + O_2 \rightleftharpoons 2SO_3$$
- A. $mol^{-1} dm^3$
 - B. $mol^{-1} dm^{-3}$
 - C. $mol.dm^{-3}$
 - D. $mol.dm^3$
- (12) The composition of matte produced during the metallurgy of copper is:
- A. $FeSiO_3$
 - B. FeS & Cu_2S
 - C. Cu_2O & FeS
 - D. Cu_2O & Cu_2S
-



Federal Board SSC-II Examination
Chemistry Model Question Paper
(Curriculum 2006)

Time allowed: 2.40 hours

Total Marks: 53

Note: Answer all parts from Section 'B' and all questions from Section 'C' on the **E-sheet**.
Write your answers on the allotted/given spaces.

SECTION – B (Marks 33)

Q.2 Attempt all parts from the following. All parts carry equal marks. (11 × 3 = 33)

i. Classify the following substances as Lewis acids or Lewis bases. (1+1+1)

a. AlBr_3 b. $\text{CH}_3\text{-CH}_2\text{-OH}$ c. CN^{-1}

OR

Write down balanced chemical equations showing the formation of salt: (1.5+1.5)

- a. Reaction of HCl acid with Al metal
b. Reaction of HCl acid with calcium carbonate

ii. Write the name and formulas of the three Nitrogen containing fertilizers. (1+1+1)

OR

What are the products formed as a result of combustion of methane in the presence of limited and excess supply of oxygen? (1.5+1.5)

iii. What is slaked lime? How is it produced during Solvay process? (1+2)

OR

Define the following with examples: (1+1+1)

- a. Lipids b. Fats c. Oils

iv. Describe ion exchange method for removal of hardness of water. (3)

OR

Derive alkyl radicals from the following alkanes? (1+1+1)

- a.) Butane b) isopropane c) propane

v. For the given reversible reaction equilibrium concentration is: (1.5+1.5)



$$\text{N}_2 = 0.602 \text{ moldm}^{-3}$$

$$\text{H}_2 = 0.420 \text{ moldm}^{-3} \text{ and}$$

$$\text{NH}_3 = 0.113 \text{ moldm}^{-3}.$$

Calculate the value of K_c and determine K_c unit.

OR

What are essential and non-essential amino acids? Draw a peptide linkage between two amino acids? (1+1+1)

- vi. How has Le-Chatlier's principle made it possible to get maximum amount of product from Habers process? Write its three conditions. (1+1+1)

OR

Concentration of an aqueous solution of potassium hydroxide is 1.0×10^{-3} mol/dm³. What is its pH? Classify this solution as acidic, basic or neutral?

(1+1+1)

- vii. Write the structural formulas of the following: (1+1+1)
a. n-Heptane b. Methanal c. Methanoic acid

OR

Describe three ways to prevent waterborne diseases? (1+1+1)

- viii. Differentiate between homocyclic and heterocyclic compound with the help of structural formulas. (1.5+1.5)

OR

How vitamins can be classified on the basis of their solubility? State their importance? (1.5+1.5)

- ix. Write two methods of the preparation of propane. Give chemical equations with conditions. (1.5+1.5)

OR

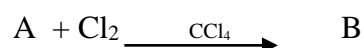
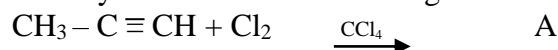
Write structures of the following compounds?

a) 1,2-Di Bromo ethane b) 2- Butene c) 2-Methyl propane (1+1+1)

- x. How will you differentiate between Ethane and Ethene using a chemical reaction? (1+2)

OR

Identify A and B in the following chemical reaction: (1.5+1.5)



- xi. Discuss three ways by which global warming can be decreased? (1+1+1)

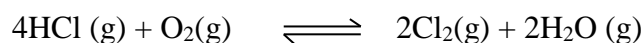
OR

Write three disadvantages of acid rain. (1+1+1)

SECTION – C (Marks 20)

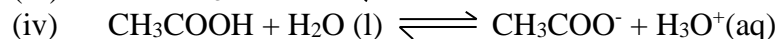
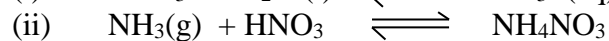
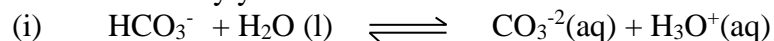
Note: Attempt all questions. Marks of each question are given within brackets.

Q.3 State law of mass action. Derive Kc expression for the following reaction: (2+4)



OR

Define Lowery – Bronsted acids and bases, identify them in the following reactions. Justify your answer. (2+1+1+1+1)



Q.4 What is hard water? Explain the two methods for removing temporary hardness of water. (2+2+2)

OR

What is nucleic Acid? Describe structure and function of DNA. (1+2.5+2.5)

Q.5 Write importance of functional group? Identify the functional group in the following organic compound: (2+1+1)

(i) CH_3COCH_3 (ii) CH_3COOH

OR

How will you convert propene into propyne? Name the products formed in each step. (2+1+1)

Q.6 Define fractional distillation. Enlist four fractions obtained by fractional distillation of petroleum. (1+1+1+1)

OR

Define metallurgy? Compare magnetic separation and cyclone separation? (2+1+1)



Federal Board SSC-II Examination
Chemistry Model Question Paper (Curriculum 2006)

SLOs

SECTION – A

- i. Complete and balance a neutralized balanced equation.
- ii. Describe acid rain and its effects.
- iii. Observe and explain the denaturing of protein.
- iv. Describe some metallurgical operations.
- v. Write chemical equation showing reaction of KMnO_4 with alkene.
- vi. Write chemical equation to show the reaction of alkene.
- vii. Classify substance as Lewis Acid or Base
- viii. Recognize and identify a molecule functional group.
- ix. Write the equation for self-ionization of water.
- x. Explain Stomach acidity.
- xi. Derive an expression for the equilibrium constant and its units.
- xii. Describe some metallurgical operations.

SECTION – B

Q.2

- i. Classify substances as Lewis acids or bases.
OR
Complete and balance a neutralization reaction.
- ii. Describe the composition of urea.
OR
Characterize properties of hydrocarbons.
- iii. Outline the basic reactions of Solvay process.
OR
Differentiate between fat and oil.
- iv. Describe methods for eliminating temporary and permanent hardness of water.
OR
Convert alkanes into alkyl radicals.
- v. Derive an expression for the equilibrium constant and its units.
OR
Explain bonding in protein molecules
- vi. Le-Chatlier's principle
OR
Given the hydrogen ion or hydroxide ion concentration, classify a solution as neutral, acidic, or basic.

- vii. Differentiate between different organic compounds on the basis of their functional groups.

OR

Describe Various types of water borne diseases.

- viii. Classify organic compounds into straight chain, branched chain and cyclic compounds.

OR

Explain and describe vitamins and their importance.

- ix. Write a chemical equation to show the preparation of alkanes from hydrogenation of alkenes and alkynes and reduction of alkyl halides.

OR

Draw structural formulas of hydrocarbons.

- x. Write chemical equations showing halogenation for alkenes, alkenes and alkynes.

OR

Write a chemical equation to show the chemical properties of alkynes.

- xi. Explain how components of the atmosphere can be used successfully in producing important chemicals.

OR

Describe acid rain and its effects

SECTION – C

- Q.3** Define Law of mass action. Derive an expression for the equilibrium constant and its units.

OR

Use the Bronsted-Lowry theory to classify substances as acids or bases, or as proton donors or proton acceptors. Classify substances as Lewis acids or bases.

- Q.4** Differentiate among soft, temporary and permanent hard water. Describe methods for eliminating temporary and permanent hardness of water.

OR

Describe the importance of nucleic acids.

- Q.5** Differentiate between different organic compounds on the basis of their Functional groups. Write a chemical equation to show the preparation of alkynes from Dehalogenation of 1,2-dihalides and tetrahalides.

OR

Write chemical equations showing halogenation for alkenes, alkenes and Alkynes.

- Q.6** Describe briefly the fractional distillation of petroleum.

OR

Describe some metallurgical operations.

| Subject: Chemistry | | Paper: Model set-1 | | Class\Level SSC-II | | Year 23-24 | | Code | | |
|-------------------------------------|---|--|---|--|-----------------------------------|---------------------------------------|-----------------------------------|--------------------------------|---|--------|
| Topics/Subtopics | Chemical Equilibrium | Acid bases and salts | Organic chemistry | Hydrocarbons | Biochemistry | Environmental Chemistry I: atmosphere | Environmental Chemistry II: Water | Chemical Industries | Total marks for each Assessment Objective | %age |
| Assessment Objective | Analysis of Questions of syllabus(contents) and assessment objectives | | | | | | | | | |
| (Knowledge based) | | | | 2ix(03) 2iiOR(03) | 1iii(01) 2iiiOR(03) 4OR(06) | 1ii(01) | 4(06) | 1iv(01) 1xii(01) 2ii(03) | 28 | 23.72% |
| (Understanding based) | 2vi(03) | 1i(01) 1x(01) 2i(03) 2viOR(03) 5OR(04) 1vii(01) | 1viii(01) 2vii(03) 2viii(03) 5(04) | 1v(01) 1vi(01) 2x(03) 2xOR(03) 2ixOR(03) | 2vOR(03) 2viiiOR(03) | 2xi(03) 2xiOR(03) | 2viiOR(03) 2iv(03) | 2iii(03) 6(04) 6OR(04) | 67 | 56.7% |
| (Application based) | 1xi(01) 2v(03) 3(06) | 1ix(01) 2iOR(03) 3OR(06) | 2ivOR(03) | | | | | | 23 | 19.49% |
| Total marks for each Topic/Subtopic | 13 | 23 | 14 | 17 | 16 | 07 | 12 | 16 | 118 | 99.98% |