

Version No.			

ROLL NUMBER						

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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.

- (1) 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
- (2) 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
- (3) Dipeptide is formed by joining of two molecules of:
- A. Amino acids B. Alcohols
 C. Carboxylic acids D. Amines
- (4) 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
- (5) 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
- (6) 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 electron 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 K_c 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
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Federal Board SSC-II Examination
Chemistry Model Question Paper
(Curriculum 2006)

Time allowed: 2.40 hours

Total Marks: 53

Note: Answer any eleven parts from Section 'B' and attempt any two questions from Section 'C' on the separately provided answer book. Write your answers neatly and legibly.

SECTION – B (Marks 33)

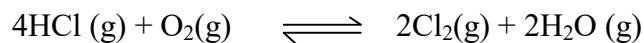
Q.2 Attempt any **ELEVEN** parts from the following. All parts carry equal marks.
(11 × 3 = 33)

- i. Classify the following substances as Lewis acids or Lewis bases.
a. AlBr_3 b. $\text{CH}_3\text{-CH}_2\text{-OH}$ c. CN^{-1}
- ii. How has Le-Chatlier's principle made it possible to get maximum amount of product from Habers process?
- iii. Concentration of an aquas solution of potassium hydroxide $1.0 \times 10^{-3} \text{ mol/dm}^3$. What is its pH? Is this solution acidic, basic or neutral?
- iv. What is slaked lime? How is it produced during Solvay process?
- v. Write the name and formulas of the three Nitrogen containing fertilizers.
- vi. Describe ion exchange method for removal of hardness of water.
- vii. For the given reversible reaction equilibrium concentration are:
$$\text{N}_{2(\text{g})} + 3\text{H}_{2(\text{g})} \rightleftharpoons 2\text{NH}_{3(\text{g})}$$
$$\text{N}_2 = 0.602 \text{ mol/dm}^3$$
$$\text{H}_2 = 0.420 \text{ mol/dm}^3 \text{ and}$$
$$\text{NH}_3 = 0.113 \text{ mol/dm}^3$$
. Calculate the value of Kc and determine Kc unit.
- viii. Write down balanced chemical equations showing the formation of salt:
a. reaction of HCl acid with Al metal
b. reaction of HCl acid with calcium carbonate
- ix. Write the structural formulas of the following:
a. n-Heptane b. Methanal c. Methanoic acid
- x. Differentiate between homocyclic and heterocyclic compound with the help of structural formula.
- xi. Write two methods of the preparation of propane. Give chemical equation with conditions.
- xii. How will you differentiate between Ethane and Ethene using a chemical test.
- xiii. Identify A and B in the following chemical reaction:
$$\text{CH}_3\text{-C}\equiv\text{CH} + \text{Cl}_2 \xrightarrow{\text{CCl}_4} \text{A}$$
$$\text{A} + \text{Cl}_2 \xrightarrow{\text{CCl}_4} \text{B}$$
- xiv. Discuss ways by which global warming can be decreased?
- xv. Define the following with examples:
a. Lipids b. Fats c. Oils

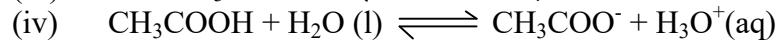
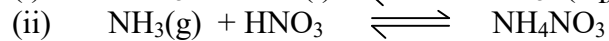
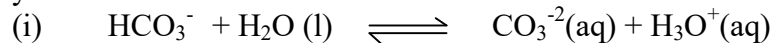
SECTION – C (Marks 20)

Note: Attempt any **TWO** questions. All questions carry equal marks. (2 × 10 = 20)

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



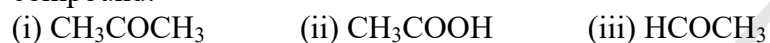
b. Identify Lowery – Bronsted acids and bases in the following reactions. Justify your answer. (1+1+1+1)



Q.4 a. What is hard water? Explain the methods for removing temporary hardness of water. (1+2+2)

b. What are nucleic Acid? Describe structure and function of DNA. (1+2+2)

Q.5 a. What is functional group? Identify the functional group in the following organic compound: (2+1+1+1)



b. How will you convert propene into propyne. Name the products formed in each step. (3+2)

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CHEMISTRY SSC-II

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 reactions of Solvay Process.
- 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. Air pollutants.
- 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.
- ii. Le-Chatlier's principle
- iii. Given the hydrogen ion or hydroxide ion concentration, classify a solution as neutral, acidic, or basic.
- iv. Outline the basic reactions of Solvay process.
- v. Describe the composition of urea.
- vi. Describe methods for eliminating temporary and permanent hardness of water.
- vii. Derive an expression for the equilibrium constant and its units.
- viii. Complete and balance a neutralization reaction.
- ix. Differentiate between different organic compounds on the basis of their functional groups.
- x. Classify organic compounds into straight chain, branched chain and cyclic compounds.
- xi. Write a chemical equation to show the preparation of alkanes from hydrogenation of alkenes and alkynes and reduction of alkyl halides.
- xii. Write chemical equations showing halogenation for alkenes, alkenes and alkynes.
- xiii. Write a chemical equation to show the chemical properties of alkynes.
- xiv. Explain how components of the atmosphere can be used successfully in producing important chemicals.
- xv. Define fat and oil.

SECTION – C

- Q.3**
- Define Law of mass action. Derive K_c expression for the equilibrium constant and its units.
 - 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.
 - Nucleic acids and their importance.
- 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.
 - Write chemical equations showing halogenation for alkenes, alkenes and Alkynes and dehydrohalogenation on reactions.

CHEMISTRY SSC-II
TABLE OF SPECIFICATION

Topics/Subtopics	Chemical Equilibrium	Acid bases and salts	Organic chemistry	Hydrocarbons	Biochemistry	The atmosphere	Water	Chemical Industries	Total marks for each Assessment Objective	%age
(Knowledge based)				2-xi(03)	1-3(01) 2-xv(03) 4b(05)	1-2(01)	2-vi(03) 4a(05)	1-4(01) 1-12(01) 2-iv(03)	26	29.9%
(Understanding based)	2-vii(03)	1-1(01) 1-7(01) 2-i(03) 2-viii(03) 3b(04)	1-8(01) 2-ix(03) 2-x(03) 5a(05)	1-5(01) 1-6(01) 2-xii(03) 2-xiii(03) 5b(05)		1-10(01)		2-v(03)	45	51.7%
(Application based)	1-11(01) 2-ii(03) 3a(06)	1-9(01) 2-iii(03)				2-xiv(03)			16	18.4%
Total marks for each Topic/Subtopic	13	16	12	16	09	05	08	08	87	100%

KEY:

1-1(01)

Question No-Part No. (Allocated Marks)