Version No.			

ROLL NUMBER						

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⑧	⑧	⑧	⑧	⑧	⑧	⑧
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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 $Al(OH)_3$ with Sulphuric Acid (H_2SO_4)?

A. $Al(SO_4)_3$ B. Al_2CO_3
C. $Al_2(SO_4)_3$ 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 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. $CH_3\text{-}CH_2\text{-}OH$ 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?
a.) Butane b) isopropane c) propane (1+1+1)

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

$$N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$$

$N_2 = 0.602 moldm^{-3}$
$H_2 = 0.420\ moldm^{-3}$ and
$NH_3 = 0.113\ moldm^{-3}$.
Calculate the value of Kc and determine Kc 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/dm^3. 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)

$CH_3 - C \equiv CH + Cl_2 \xrightarrow{CCl_4}$ A

A $+ Cl_2 \xrightarrow{CCl_4}$ B

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)

$4HCl\ (g) + O_2(g) \rightleftharpoons 2Cl_2(g) + 2H_2O\ (g)$

OR

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

(i) $HCO_3^- + H_2O\ (l) \rightleftharpoons CO_3^{-2}(aq) + H_3O^+(aq)$

(ii) $NH_3(g) + HNO_3 \rightleftharpoons NH_4NO_3$

(iii) $F^- + BF_3 \rightleftharpoons BF_4^-$

(iv) $CH_3COOH + H_2O\ (l) \rightleftharpoons CH_3COO^- + H_3O^+(aq)$

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%