2011

Roll No. | | | | | | |

Answer Sheet No._____

Sig. of Candidate._____

Sig. of Invigilator._____

CHEMISTRY HSSC–II

SECTION – A (Marks 17)

Time allowed: 25 Minutes

NOTE:- Section–A is compulsory and comprises pages 1-2. All parts of this section are to be answered on the question paper itself. It should be completed in the first 25 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.

Q. 1 Circle the correct option i.e. A / B / C / D. Each part carries one mark.

(i) Upon what do the properties of an element in the periodic table depend?

A. Atomic size B. Atomic mass

C. Electronic configuration D. Number of protons

(ii) Which is formed when Lithium is heated in air?

A. Li_2O B. Li_3N

C. Li_2O and Li_3N D. Li_2O_2 and Li_3N

(iii) Laughing gas is chemically_____

A. NO B. N_2O

C. NO_2 D. N_2O_4

(iv) Which does **NOT** represent a possible reaction?

A. Chlorine + potassium bromide ⟶ potassium chloride + bromine

B. Bromine+ potassium iodide ⟶ potassium bomide + iodine

C. Chlorine + potassium fluoride ⟶ potassium chloride + fluorine

D. Fluroine + potassium chloride ⟶ potassium fluoride + chlorine

(v) Lanthanides and Actinides are also called_____.

A. Normal elements B. Transition elements

C. Noble gases D. Inner transition elements

(vi) What is the name of the reaction when $C_2H_5ONa + C_2H_5I$ gives an ether?

A. Hofmann's reaction B. Williamson's reaction

C. Kolbe's synthesis D. Wurtz's reaction

(vii) Preparation of vegetable ghee involves_____

A. Halogenation B. Hydrogenation

C. Hydroxylation D. Dehydrogenation

(viii) An organic compound is capable of reacting with sodium and is capable of being oxidised to a carboxylic acid. The compound contains only carbon, hydrogen and oxygen. This organic compound my be_____

A. Alcohol B. Aldehyde

C. Carbohydrate D. Ether

(ix) Propanone is a ketone which could be prepared by the action of potassium dichromate $K_2Cr_2O_7$ on____

A. 1-propanol B. 2-propanol

C. Propene D. Propanoic acid

(x) When an unsymmetrical olefin like $(CH_3)_2CHCH=CH_2$ is hydrated with dil. H_2SO_4 the major product is _____

A. 3-Methy-1-butanol B. 1-Methl 2-butanol

C. 3-Methyl -2-butanol D. 2-Methyl 2-butanol

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DO NOT WRITE ANYTHING HERE

(xi) Which compound will give a positive Tollen's test?

A. Pentanoic acid B. 2-Pentanone

C. Pentanal D. 3-pentanone

(xii) Amino acids are covalently bonded to each other through_____.

A. Hydrogen bonding B. Disulfide bridges

C. Peptide bonds D. None of these

(xiii) Which sequence of steps is **CORRECT** for the manufacture of cement?

A. Mixing, heating, grinding, crushing B. Crushing, heating, mixing, grinding

C. Crushing, mixing, heating, grinding D. Crushing, grinding, mixing, heating

(xiv) Which of the following is **NOT** an affect of the acid rain?

A. It increases the percentage of CO_2 in the atmosphere

B. It leaches metals like aluminum, mercury and lead from soil

C. It damages the buildings

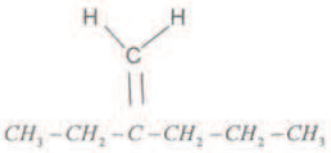
D. It decreases the **pH** of natural rain

(xv) Geometric isomerism will be exhibited by_____

A. 1-pentene B. 3-Methyl-1-butene

C. 2-pentene D. All of these

(xvi) What is the best name for the following compound?



$$CH_3-CH_2-C(=CH_2)-CH_2-CH_3$$

A. 3-methylenehexane B. 2-prophyl-1-butene

C. 4-ethyl-4-pentene D. 2-ethyl-1-pentene

(xvii) Which of the following is **NOT** a heterocyclic compound?

A. Furan B. Thiophene

C. Pyridine D. Aniline

For Examiner's use only:

Total Marks:	17
Marks Obtained:	

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CHEMISTRY HSSC–II

Time allowed: 2:35 Hours **Total Marks Sections B and C: 68**

NOTE:- Sections B and C comprise pages 1-2. Answer any fourteen parts from Section 'B' and any two questions from Section 'C' on the separately provided answer book. Use supplementary answer sheet i.e. Sheet–B if required. Write your answers neatly and legibly.

SECTION – B (Marks 42)

Q. 2 Attempt any FOURTEEN parts. The answer to each part should not exceed 5 to 6 lines. (14 x 3 = 42)

(i)	a.	Both Sodium and Phosphorus are present in the same period of the periodic table yet their oxides are different is nature. Why?	01
	b.	How do you justify that **BeO** is an amphoteric oxide?	02
(ii)	a.	What are the advantages of Down's cell for the preparation of sodium?	01
	b.	Why is $CaCl_2$ added to molten $NaCl$ in Down's cell?	01
	c.	Which substances are deposited at cathode and anode in the Down's cell?	01
(iii)	a.	Give the names and formulae of any two different acids of boron.	01
	b.	How can we produce boron nitride from borax?	01
	c.	Justify that the aqueous solution of borax turns red litmus to blue.	01
(iv)		Give mechanism of Kolbe's electro synthesis of Ethene.	03
(v)	a.	Define Hydration energy.	01
	b.	What factors can affect the Hydration energy?	01
	c.	Explain the trend of hydration energy. In group.	01
(vi)	a.	How does $K_2Cr_2O_7$ act as an oxidizing agent? Give one equation.	01
	b.	What is Chromyl chloride test?	01
	c.	How does the acidic medium develop an equilibrium between chromate and dichromate ion?	01
(vii)	a.	What is Rotary kiln?	01
	b.	Give different zones in the rotary kiln and their temperature ranges.	01
	c.	What is the final product of rotary kiln?	01
(viii)	a.	In what respects does hydrogen differ from halogens?	1.5
	b.	How does hydrogen resemble the elements of group IV-A?	1.5
(ix)	a.	What is Smog? Give its sources.	01
	b.	What is Photochemical smog?	01
	c.	What are the conditions for the formation of smog?	01
(x)		Name the following co-ordination compounds:	03
	a.	$K_4[Fe(CN)_6]$	
	b.	$[CoBr(NH_3)_5]SO_4$	
	c.	$[Cr(NO_2)_3(NH_3)_3]$	
(xi)	a.	1-Butene does not show geometrical isomerism but 2-butene does. Justify it.	01
	b.	Why is restricted rotation necessary to show the geometrical isomerism?	01
	c.	Write all possible isomers of $C_2H_2Br_2$.	01
(xii)	a.	Define Markownikov's rule.	1.5
	b.	Complete the following reaction $CH_2 = CH - CH_3 + HOCl \longrightarrow$	1.5
(xiii)	a.	How can benzene be converted into acetophenone?	01
	b.	How can aniline be converted into benzene?	02

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(xiv) a. How does nature of alkyl group change when alkyl halide is converted into Grignard's reagent? 01

b. Why is the dry ether necessary for the preparation of Grignard's reagent? 01

c. How does the primary alcohol produce when ethylene oxide reacts with Grignard's reagent? 01

(xv) a. Why the aldehydes with no α -hydrogen give Cannizzaro's reaction? 1.5

b. Distinguish between benzaldehyde and acetaldehyde. 1.5

(xvi) a. How is acetic acid prepared from alkyl nitriles? 01

b. Give the mechanism for the reaction of acetic acid with $SOCl_2$. 02

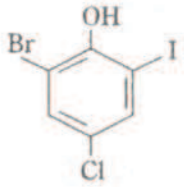
(xvii) a. What is Absolute alcohol and Rectified alcohol? 01

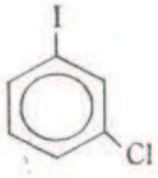
b. Absolute alcohol can not be prepared by fermentation process. Why? 01

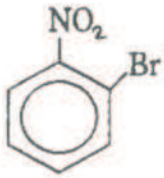
c. What is meant by denaturing of alcohol? 01

(xviii) Show with the help of mechanism how acetaldehyde in the presence of strong base gives crotonaldehyde. 03

(xix) Name the following compounds: 03

a. 

b. 

c. 

SECTION – C (Marks 26)

Note:- **Attempt any TWO questions. All questions carry equal marks.** **(2 x 13 = 26)**

Q. 3 **a.** What are amino acids? Give one example each of acidic, basic and neutral amino acids. 04

b. How are carboxylic acids and aldehydes converted into α -amino acids? 04

c. How can α -amino acid be converted into α -hydroxy acids? 02

d. What are Zwitter ion and peptide linkage? 02

e. How are α -amino acids tested? 01

Q. 4 **a.** Discuss briefly the various sources which contaminate water. 06

b. Discuss briefly the various stages of water treatment. 03

c. What are the harmful effects of chlorination of water? 02

d. How **COD** is measured? 02

Q. 5 **a.** How does Sulphur differ from Oxygen? 02

b. Show with the help of flow sheet diagram how Sulphur is converted into Sulphuric acid. 05

c. Sulphuric acid is said to act as an acid, an oxidizing agent and dehydrating agent. Describe two reactions in each case to illustrate the truth of this statement. 06