

CHEMISTRY Part-II
HSSC-12th-Swat-2026

Time: 20 Minutes

Marks: 18

Multiple Choice Questions
01 Mark for each

Paper Code

Roll No. of the Student

Serial No. Of the Answer Book

SECTION-A

Note:

- 1) Attempting all MCQs is compulsory. This paper along with the OMR sheet must be returned to the superintendent after due time.
- 2) Fill the circle (A)(B)(C)(D), which one is correct with blue or black ball point in separate OMR Sheet like ●
- 3) If more than one circle in the OMR sheet is filled then no credit will be given to such answer.

I.i. The general formula of normal oxides of group-IA elements is:

- M_2O (B) MO_2 (C) M_2O_2 (D) MO

ii. The element of group-IIA which forms very strong layer of its oxide on its surface is:

- Beryllium (B) Calcium (C) Strontium (D) Barium

iii. $SnCl_4$ and $PbCl_4$ react violently to produce their respective oxides and fumes of HCl with:

- (A) Oxygen (B) Hydrogen peroxide ● Water (D) Nitrogen

iv. The correct name of $[Cu(NH_3)_4]SO_4$ is:

- Tetraammine copper (II) sulfate (B) Copper tetraammine sulfate (C) Ammonia copper sulfate (D) Copper sulfate ammonia

v. Members of a homologous series differ from each other by:

- (A) One oxygen atom ● One CH_2 group (C) One hydrogen atom (D) One nitrogen atom

vi. The type of isomerism shown by compounds having different arrangements in space is:

- (A) Chain isomerism (B) Structural isomerism ● Stereoisomerism (D) Functional isomerism

vii. An atom or group of atoms having unpaired electron (s) is:

- Free radical (B) Ion (C) Electrophile (D) Nucleophile

viii. S_N1 mechanism is generally followed by:

- (A) Methyl halides (B) Primary alkyl halides (C) Secondary alkyl halides ● Tertiary alkyl halides

ix. With the liberation of hydrogen gas, alcohols react with sodium or potassium to form:

- (A) Normal salt (B) Acidic salt (C) Basic salt ● Alkoxide salt

x. The oxygen atom of alcohols has:

- (A) One lone pair of electrons ● Two lone pairs of electrons (C) Three lone pairs of electrons (D) Four lone pairs of electrons

xi. The general formula aldehydes and ketones is:

- $C_nH_{2n}O$ (B) C_nH_{2n+2} (C) C_nH_{2n} (D) C_nH_{2n-2}

xii. Carboxylic acids are functional isomers of:

- (A) Alcohols (B) Aldehydes ● Esters (D) Ethers

xiii. The optimum pH of pepsin is around:

- (A) 1.0 ● 2.0 (C) 3.0 (D) 4.0

xiv. A steroid present in the blood of shark is:

- (A) Nandrolone (B) Oxandrolone (C) Stanozolol ● Squalene

xv. Another name of hexanedioic acid is:

- (A) Succinic acid (B) Maleic acid ● Adipic acid (D) Fumaric acid

xvi. CO may cause loss of consciousness or death at concentration higher than:

- 750 ppm (B) 740 ppm (C) 730 ppm (D) 720 ppm

xvii. Headache and shortness of breath occur when the concentration of inhaled carbon monoxide in closed spaces reaches:

- 100 ppm (B) 120 ppm (C) 140 ppm (D) 160 ppm

xviii. Ions of small m/z values in magnetic sector mass analyzer are deflected:

- More (B) Moderate (C) Less (D) least

Note: Time allowed for section B and C is 2 hours and 40 minutes.

SECTION "B"

Marks: 40

Attempt any Ten Questions out of the following. Each question carries equal marks.

1. Explain the structure of magnesium oxide and aluminum oxide. Give structural similarities of MgO and NaCl.
2. Write the complete and balanced chemical reactions of the following with water. Also mention the nature of product formed in each case.
 - i) silicon tetrachloride
 - ii) magnesium oxide
 - iii) phosphorus pentachloride
 - iv) Sulphur dioxide
3. Define polarizing power and polarizability. Explain the effect of heat on nitrates and carbonates of Group-IA elements with chemical equations.
4. What is coal tar? How is it separated into its different compounds? Mention the products produced as a result of separation. Also, give the uses of these products.
5. Give structures of the following:
 - (i) 3,3-dimethylpentane
 - (ii) 4-isopropyl-3-methylheptane
 - (iii) 1-ethyl-2-methylcyclopentane
 - (iv) 1,2-dimethylcyclopentane
6. Define halogenation of alkenes. Write the reaction of ethene with bromine (in CCl₄). Why is this reaction used?
7. What are organomagnesium compounds? write the reaction of methylmagnesium bromide with methyl formate and ethyl propanoate. Also writes the names of products formed.
8. What are diazonium salts and diazotization reaction? Explain its preparation with balanced chemical equation.
9. Prepare benzoic acid from the following using KMnO₄ as oxidizing agent:
 - (i) toluene
 - (ii) ethyl benzene
10. Describe polysaccharides in four points.
11. Write the two important uses of each of the following.
 - (i) refinery gas
 - (ii) light naphtha
 - (iii) gas oil
 - (iv) kerosene oil
12. Define chemical shift. Write its expression. what is its value for TMS? Write any two salient features of TMS.
13. Define spectroscopy. Explain in three steps how does spectroscopy help in the identification of chemical compounds.

SECTION "C"

Marks: 27

Note: Attempt any Three Questions of the following. Each question carries equal Marks.

14. a) Define oxidizing agent. Discuss the trend in the oxidizing power of halogens down a group. Give reasons for such a change in oxidizing strength down the group. 5
 b) What is coordination number of a central metal ion? Give an example. Determine the coordination number of the central metal ion and expected geometry of the following coordination compounds: (i) [Cu (NH₃)₄ (H₂O)₂]²⁺ (ii) [CoCl₄]²⁻ 4
15. a) What is hydrogenation reaction? Explain with chemical equations how is ethyne converted to ethane? Also mention the following: (i) catalysts (ii) temperatures 5
 b) Define E2 mechanism. Why is it so called? Explain E2 mechanism in two steps. 4
16. a) What is halogenation of phenol? Give the balanced chemical equation for the reaction of phenol with an aqueous solution of bromine. Name the product formed and state the purpose of the reaction. 5
 b) What is Friedel-Crafts acylation? How are aromatic ketones prepared by this reaction? Also mention the catalyst used. 4
17. a) Describe atomic absorption spectrophotometry in five points. 5
 b) Define ozone layer. Mention its location in the atmosphere. Explain how does this layer absorb Uv radiation from the sun. 4