

# Chemistry (Objective)

(GROUP-I)

Time: 20 Minutes

Marks: 17

RWP-1-24

NOTE: Write answers to the questions on objective answer sheet provided. Four possible answers A, B, C & D to each question are given. Which answer you consider correct, fill the corresponding circle A, B, C or D given in front of each question with marker or pen ink on the answer sheet provided.

- The geometry of carbonium ion formed in  $SN^1$  mechanism is:  
(A) Tetrahedral (B) Square planar (C) Triangular planar (D) Hexagonal
- Ethanol can be converted into ethanoic acid by:  
(A) Hydrogenation (B) Hydration (C) Oxidation (D) Fermentation
- Ketones are prepared by the oxidation of:  
(A) Primary alcohol (B) Secondary alcohol (C) Tertiary alcohol (D) Long chain primary alcohol
- Which of the following derivatives cannot be prepared directly from acetic acid?  
(A) Acetamide (B) Acetyl Chloride (C) Acetic Anhydride (D) Ethyl Acetate
- Which one of the following elements is **NOT** present in all proteins?  
(A) Carbon (B) Hydrogen (C) Nitrogen (D) Sulphur
- Which is **NOT** a calcareous material?  
(A) Lime (B) Clay (C) Marble (D) Marine shell
- Peroxyacetyl nitrate (PAN) is an irritant to human beings and it affects:  
(A) Eyes (B) Ears (C) Stomach (D) Nose
- The main cause of reducing smog is combustion of:  
(A) Oils (B) Coal (C) Natural gas (D) Gasoline
- Ionization energy of an atom does not depend on:  
(A) Magnitude of nuclear charge (B) Size of atom (C) Physical state (D) Shielding effect
- The oxide of Beryllium is:  
(A) Acidic (B) Basic (C) Amphoteric (D) Strongly acidic
- The chief ore of Aluminium is:  
(A)  $Na_3AlF_6$  (B)  $Al_2O_3 \cdot 2H_2O$  (C)  $Al_2O_3$  (D)  $Al_2O_3 \cdot H_2O$
- The oxidation of "NO" in air produces:  
(A)  $N_2O$  (B)  $NO_2$  (C)  $N_2O_3$  (D)  $N_2O_5$
- Hydrogen bond is the strongest between the molecules of:  
(A) HF (B) HCl (C) HBr (D) HI
- Coordination number of  $[Pt(OH)_2(NH_3)_4]SO_4$  is:  
(A) II (B) III (C) IV (D) VI
- The state of hybridization of carbon atom in ethane is:  
(A)  $sp^3$  (B)  $sp^2$  (C)  $sp$  (D)  $dsp^2$
- Preparation of vegetable ghee involves:  
(A) Halogenation (B) Hydrogenation (C) Hydroxylation (D) Dehydrogenation
- Aromatic hydrocarbons are the derivatives of:  
(A) Normal series of paraffins (B) Alkenes (C) Benzene (D) Cyclohexane

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**Chemistry** (Subjective)

## SECTION-I

RWP-1-24

## 2. Write short answers of any eight parts from the following:

(8x2=16)

- Define hydration energy. How does it vary from top to bottom in I – A and II – A groups?
- Why do the fluorides show the highest melting and boiling points as compared to other halides?
- What are the products formed when lithium and sodium nitrates are decomposed?
- Why is  $Mg(OH)_2$  sparingly soluble in water while  $Ba(OH)_2$  most soluble?
- What is the difference between paramagnetic and diamagnetic substances? Give brief description.
- What is meant by co-ordination number and co-ordination sphere?
- How is ethane prepared from ethyl bromide?
- How  $CH_3 - CHO$  react with ethyl magnesium bromide followed by acid hydrolysis?
- What is difference between Hydrolases and Lysases?
- Why are lipids important? xi. How temperature and radiation affect the enzymes?
- What is an acid rain? Give brief description about its impact on our environment.

## 3. Write short answers of any eight parts from the following:

(8x2=16)

- Write down any four similarities between oxygen and sulphur.
- Give two methods of preparation of  $NO_2$ .
- What are Freons and Teflons?
- Give chemical reaction of  $NaOH$  and  $Cl_2$  in hot state ( $70^\circ C$ ).
- What is modern definition of organic chemistry?
- Define functional group isomerism with one example.
- Differentiate between saturated and unsaturated hydrocarbons.
- What is catalytic oxidation of  $CH_4$  upto the formation of  $HCHO$ ?
- The reaction of propene with  $HBr$  follow Markownikov's rule. Justify the statement by giving reaction.
- Define environmental pollutant.
- Write down any two harmful effects of acid rain.
- How are leather tanneries responsible for pollution of water?

## 4. Write short answers of any six parts from the following:

(6x2=12)

- What chemical garden?
- Write down four uses of Sodium Silicate.
- Why is the aqueous solution of Borax alkaline in nature?
- Prepare Glyoxal from benzene.
- How are ethers prepared by Williamson's synthesis?
- Why is phenol acidic in nature?
- Give the reactions of Formaldehyde with: (i)  $HCN$  (ii)  $NH_2 - OH$ .
- How is acetamide prepared from acetic acid?
- Give the two reactions in which H-atom of carboxylic acid is involved.

## SECTION-II

Note Attempt any three questions. Each question carries equal marks:

(8x3=24)

- Write a note on oxides as a periodic relationship in compounds. (4)
  - Why Lithium shows peculiar behaviour? Give its any seven differences from other alkali metals. (4)
- Give eight uses of Nobel gases. (b) How is urea fertilizer is prepared in Pakistan? Describe the process in detail. (4+4)
- Discuss structure of methane on the basis of hybridization. (4)
  - How Propyl Magnesium Bromide reacts with following? (i)  $CH_3COCH_3$  (ii)  $CO_2$ . (2+2)
- How does ethyne react with (i) Hydrogen (ii) Halogen acid (iii) alkaline  $KMnO_4$  (iv)  $10\% H_2SO_4 + HgSO_4$ . (1x4)
  - How sodium bisulphite reacts with (i) Formaldehyde (ii) Acetone Also write the general mechanism. (4)
- Define Friedel-Crafts acylation alongwith its example and mechanism. (4)
  - How can you prepare the following from Phenol? (i) Benzene (ii) Cyclohexanol (iii) 2, 4, 6-tribromophenol (1x4)