

Roll No. _____ to be filled in by the candidate.

(For all sessions)

Paper Code	8	4	8	7
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Chemistry (Objective Type)**RWP-21****Time: 20 Minutes****Marks: 17**

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.

- 1.1. Which of the following halogen is weak oxidizing agent?
 (A) Cl_2 (B) F_2 (C) I_2 (D) Br_2
2. Which of the following is a typical transition element?
 (A) Sc (B) Y (C) Ra (D) Co
3. The state of hybridization of carbon atom in methane is:
 (A) sp^3 (B) sp^2 (C) sp (D) dsp^2
4. Formula of chloroform is:
 (A) CCl_4 (B) CHCl_3 (C) CH_2Cl_2 (D) CH_3Cl
5. The electrophile in aromatic sulphonation is:
 (A) H_2SO_4 (B) BF_3 (C) SO_3 (D) SO_3^+
6. Elimination bimolecular reaction involves:
 (A) First order kinetics (B) Second order kinetics (C) Third order kinetics (D) zero order kinetics
7. Which compound shows hydrogen bondings?
 (A) C_2H_6 (B) $\text{CH}_3\text{—O—CH}_3$ (C) $\text{C}_2\text{H}_5\text{Cl}$ (D) $\text{C}_2\text{H}_5\text{OH}$
8. Percentage of water in Formalin is:
 (A) 52% (B) 8% (C) 40% (D) 60%
9. Which of the following will have the highest boiling point?
 (A) Methanal (B) Ethanal (C) Propanal (D) 2-Hexanone
10. Which of the following ester gives apricot flavour?
 (A) Amyl acetate (B) Benzyl acetate (C) Amyl butyrate (D) Octyl acetate
11. The solution of which acid is used for seasoning of food?
 (A) Formic acid (B) Acetic acid (C) Benzoic acid (D) Butanoic acid
12. Through how many zones does the charge pass in a rotary kiln?
 (A) 4 (B) 3 (C) 2 (D) 5
13. Keeping in view the size of atoms, which order is the correct one?
 (A) $\text{Mg} > \text{Sr}$ (B) $\text{Ba} > \text{Mg}$ (C) $\text{Lu} > \text{Ce}$ (D) $\text{Cl} > \text{I}$
14. Which ion will have the maximum value of heat of hydration?
 (A) Na^+ (B) Cs^+ (C) Ba^+ (D) Mg^{+2}
15. Which element belongs to group IVA of the periodic table?
 (A) Ba (B) I (C) Pb (D) O
16. Which of the following catalyst is used in contact process:
 (A) FeO_3 (B) V_2O_5 (C) SO_3 (D) Ag_2O
17. The anhydride of HClO_4 is:
 (A) ClO_3 (B) ClO_2 (C) Cl_2O_5 (D) Cl_2O_7

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Chemistry (Essay Type)**RwP-21**

Time: 2:40 Hours

Marks: 68

Section - I**2- Write short answers of any eight parts from the following.****2 x 8 = 16**

- Why the second value of ionization energy is always greater than first ionization energy values?
- The hydration energies of ions are in the given order: $Al^{+3} > Mg^{+2} > Na^{+}$. Explain.
- Write down the problems faced during the working of diaphragm cell.
- What happens when Lithium hydride is treated with water? Give reaction.
- What is the action of an aqueous solution of borax on litmus and why?
- How does Aluminium react with non-metals? Give any two reactions.
- Phosphorus element can form five covalent bonds; nitrogen cannot, why?
- What is Laughing gas? How is it prepared? Give one reaction.
- Discuss the peculiar behaviour of Carbon.
- Give the importance of Nitrogen fertilizers.
- Write down the steps for the manufacturing of urea.
- Describe the composition of good portland cement.

3- Write short answers of any eight parts from the following.**2 x 8 = 16**

- Compare the physical states and colours of halogens at room temperature.
- What is the reason for variations of oxidation states of transition elements?
- What happens when the given compounds are heated? (a) Calcium Acetate (b) Ammonium Acetate.
- Write down the Mechanism of the reaction between acetic acid and ethanol.
- How Iodoform is prepared from acetaldehyde and Ethyl alcohol?
- Prepare m-chloronitrobenzene from benzene in two steps.
- Why HF is weaker acid than HCl?
- What are interstitial compounds?
- Halogens are strong oxidizing agents. Justify.
- What are fatty acids? Give an example.
- Give mechanism of nitration of benzene.
- Write four important uses of Acetaldehyde.

4- Write short answers of any six parts from the following.**2 x 6 = 12**

- What is the excellent method for the preparation of Alkyl iodide?
- Write reactions of methyl chloride and ethyl chloride with Sodium Lead Alloy.
- What do you know about the Vital Force Theory?
- What is Stream Cracking?
- Why Alkanes are also called Paraffins?
- What is hydrogenolysis? Give an example.
- Give two uses of Methane.
- Give classification of Monohydric Alcohols.
- What do you know about Denaturing of Alcohol?

Section - II**NOTE: Answer any three questions from the following.****3x3=24**

- (a) Write the essential features of all periodic tables in periodic table. 4
(b) Write the peculiar behaviour of "Be". 4
- (a) Write down two reactions in which HNO_2 acts as an oxidizing agent and two reactions in which HNO_2 acts as reducing agent. 4
(b) Write four common properties of transition elements. 4
- (a) What is Isomerism? Discuss position isomerism and geometrical isomerism. 4
(b) How does acetaldehyde react with (i) CH_3CH_2MgBr (ii) $NaHSO_3$ (iii) NH_2OH (iv) N_2H_4 . 4
- (a) Explain Halogenation of Alkanes with mechanism. 4
(b) Differentiate between E_1 and E_2 reactions. 4
- (a) Write any four methods of preparation of Benzene. 4
(b) Write reactions of alcohol in which C-O bond and O-H bond breaks (Two reactions in each case). 4

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