

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.

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

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

(For all sessions)

Chemistry (Essay Type)

RW P-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 Steam 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.**

8x3=24

- (a) Write the essential features of all periodics 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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