

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

(For all sessions)

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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