

CHEMISTRY (Subjective) GROUP - II

Time: 02:40 Hours

Marks: 68

SECTION – I**2. Write short answers to any EIGHT parts.**

16

- The oxidation states vary in a period but remain almost constant in a group. Why?
- The hydration energies of the ions are in the following order $Al^{3+} > Mg^{2+} > Na^+$. Justify.
- Write the names and chemical formulas of important minerals of sodium.
- What happens when (a) Lithium carbonate is heated (b) Lithium hydroxide is heated to red hot?
- How borax can be converted into orthoboric acid?
- Why nitric acid is frequently transported in Aluminium containers?
- Write the names and chemical formulas of four important boric acids.
- How does nitrogen differ from other elements of its group?
- Write the equation for the reaction between conc. H_2SO_4 and copper and explain what type of reaction is it?
- Why nitrogen is necessary for plants? Give names of two nitrogen fertilizers.
- ~~What do you mean by setting of cement?~~
- Write any four points of essential qualities of a good fertilizer.

3. Write short answers to any EIGHT parts.

16

- Give reactions of bleaching powder with ammonia and carbon dioxide.
- Write reaction for the preparation of bleaching powder and names of the methods used to prepare it.
- Write names of these compounds. (a) $NaClO_3$ (b) HIO_3
- Why does damaged tin plated iron get rusted quickly?
- What are substitutional alloys? Give examples.
- What arguments were given by Kekule to confirm the regular hexagonal structure for benzene?
- How would you prepare benzene from acetylene and toluene from n-heptane?
- What is Benedict's solution test?
- Write the names of those weak oxidizing agents, which can oxidize aldehydes but not the ketones?
- Write molecular formulas of palmitic acid and stearic acid.
- How would you prepare acetic acid from ethanol and a suitable alkane nitrile?
- Give two reactions of carboxylic acids in which OH group of the acids are involved.

4. Write short answers to any SIX parts.

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- Define functional group. Give any two examples.
- What is tautomerism? Give example.
- What is hydrogenolysis? Give example.
- Convert CH_4 into formaldehyde by catalytic oxidation.
- What is mustard gas? How it is prepared?
- Define nucleophile and electrophile.
- ~~Complete the reactions: (a) $C_2H_5Br + NH_3 \rightarrow$ (b) $C_2H_5Br + CH_3COONa \rightarrow$~~
- Write the structural formulae of lactic acid and tartaric acid.
- Distinguish between methanol and ethanol by one test.

SECTION – II Attempt any THREE questions. Each question carries 08 marks.

- Write similarities and differences of hydrogen with IV-A group elements. 04
 - Describe diaphragm cell method for preparation of NaOH. 04
- Write equations for the reactions of conc. HNO_3 with: (i) Zn (ii) Cu (iii) Sn (iv) HI 04
 - Describe electrochemical theory to explain corrosion. 04
- Describe atomic orbital hybridization. Explain sp^2 -hybridization. 04
 - What is aldol condensation reaction? Give an example and mechanism. 04
- Explain Markownikov's rule with mechanism and two examples. 04
 - Explain S_N2 reactions with example and characteristics. 04
- How is straight chain structures for the benzene is ruled out. 04
 - Give the preparation of methyl alcohol on large scale. How it may be distinguished from ethyl alcohol. 04