

Time: 2:40 Hours

SUBJECTIVE

Marks: 68

Note: Section I is compulsory. Attempt any THREE (3) questions from Section II.

(SECTION – I)**2. Write short answers to any EIGHT questions.**

(2 x 8 = 16)

- Explain the variation in melting points along the short periods.
- Why the ionic radii of negative ions are larger than the size of their parent atoms?
- Why the elements of group IIA are called alkaline earth metals?
- Write down major problems faced during the preparation of sodium hydroxide by the diaphragm cell.
- Write down the four uses of borax.
- Give the chemistry of borax bead test.
- How will you convert boric acid into borax and vice versa?
- Describe "ring test" for the confirmation of nitrate ions in solution.
- What is "aqua regia"? How does it dissolve gold?
- What are essential nutrient elements? Why these are needed for plant growth?
- Write down the important raw materials used for the manufacture of cement.
- What do you mean by prilling of urea?

3. Write short answers to any EIGHT questions.

(2 x 8 = 16)

- Convert acetic acid into ethane by reduction method.
- Give the mechanism for ester formation.
- How acetic acid is prepared from Grignard's Reagent? Give reaction.
- How will you distinguish between ethanal and propanal?
- Convert methanol into ethanal?
- Convert ethyl benzene into benzoic acid.
- What is wurtz-fitting reaction? How it helps to prepare ethyl benzene?
- Why does damaged tin plated iron get rusted quickly?
- Mention any four properties of transition elements.
- Give uses of bleaching powder.
- What are oxyacids of chlorine? Give their names and formulas.
- How does chlorine react with $\text{NaOH}_{(\text{aq})}$ at different temperatures?

4. Write short answers to any SIX questions.

(2 x 6 = 12)

- Define functional group? Give examples of oxygen containing functional groups.
- How quality of fuel can be improved?
- What is ozonolysis? Write down chemical equation.
- How does propyne react with the following reagents:
(a) $\text{AgNO}_3 / \text{NH}_4\text{OH}$ (b) $\text{Cu}_4\text{Cl}_2 / \text{NH}_4\text{OH}$
- What is β -Elimination reaction?
- What is nucleophile? Give two examples of nucleophiles.
- How methanol and ethanol can be distinguished?
- Write down two reactions of alcohol in which O-H bond is broken.
- What is mustard gas? How it can be prepared?

(SECTION - II)

- (a) Write down note on ionization energy. Give its variation within groups and periods. 4
- (b) Explain peculiar behaviour of beryllium among its group members. 4
- (a) Write down four similarities and four differences between oxygen and sulphur. 4
- (b) Discuss the following properties of transition metals: 4
 - Para magnetism
 - Oxidation State
- (a) Define hybridization. Explain SP^2 hybridization with one example. 4
- (b) Write down any eight uses of formaldehyde. 4
- (a) How will you convert ethyne into 4
 - Acetaldehyde
 - Divinyl Acetylene
 - Chloroprene
 - Glyoxal
- (b) What is cannizzaro's reaction? Give an example and mechanism. 4
- (a) Predict the major products of bromination of the following: 4
 - Toluene
 - Nitrobenzene
 - Benzaldehyde
 - Benzoic acid
- (b) How methanol is prepared on industrial scale? Why is it also called wood spirit? 4