

SECTION 'B' (Short-Answer Questions) (32)

NOTE: Answer any EIGHT part questions. Select FOUR part questions from Inorganic Chemistry and FOUR part questions from Organic Chemistry. All questions carry equal marks.

INORGANIC CHEMISTRY

2. (i) Write the electronic configuration of the following elements having the atomic number $Z = 19$, $Z = 29$, $Z = 35$, $Z = 42$ and also identify group and period.

(ii) Give the resemblances of hydrogen with the elements of group IA and VIIA and write four points of each group.

(iii) Refer to the list of given compounds:

Compound	A	B	C	D
Specific Name	Magnesite	Whiterite	Water glass	Lunar caustic

Write

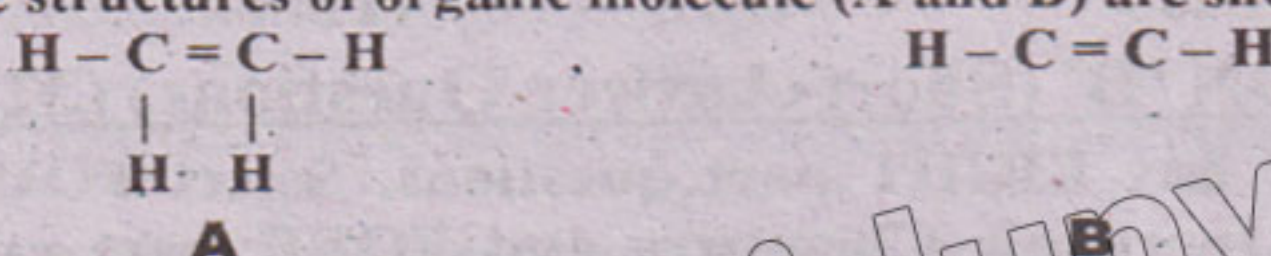
- * Chemical formula of B and C
 - * Reaction of A with dilute H_2SO_4 .
 - * Reaction for preparation of C.
 - * Common uses of D.
- (iv) Describe the construction of Hoop's electrolytic cell for obtaining pure Aluminium along with the chemical reaction involved.
- (v) Write IUPAC names of any four of the following complexes:
- * $[Pt(NH_2)_3(H_2O)]^{4+}$
 - * $K_3[FeF_6]$
 - * $[Ni(CN)_4]^{2-}$
 - * $[Co(en)_2](NO_3)_2$
 - * $[Ti(H_2O)_3]Cl_3$
- (vi) Write any four chemical equations of the following:
- * Mg is put in dilute HNO_3
 - * Litharge is heated in excess of air.
 - * Hydrogen sulphide reacts with bromine
 - * Carbon monoxide reacts with chlorine gas
 - * Chlorine react with conc NaOH
- (vii) Give any four scientific reasons of the following
- * Alkaline earth metals are smaller in size than alkali metals.
 - * Sulphuric acid has high boiling point
 - * Ionization potential decreases from top to bottom in a given group of periodic table
 - * Alkali metals are powerful reducing agents.
 - * Transition metals form non-stoichiometric compounds.

ORGANIC CHEMISTRY

(viii) Define the following:

- * Cracking
- * Functional group
- * Zwitter ion
- * Isomerism

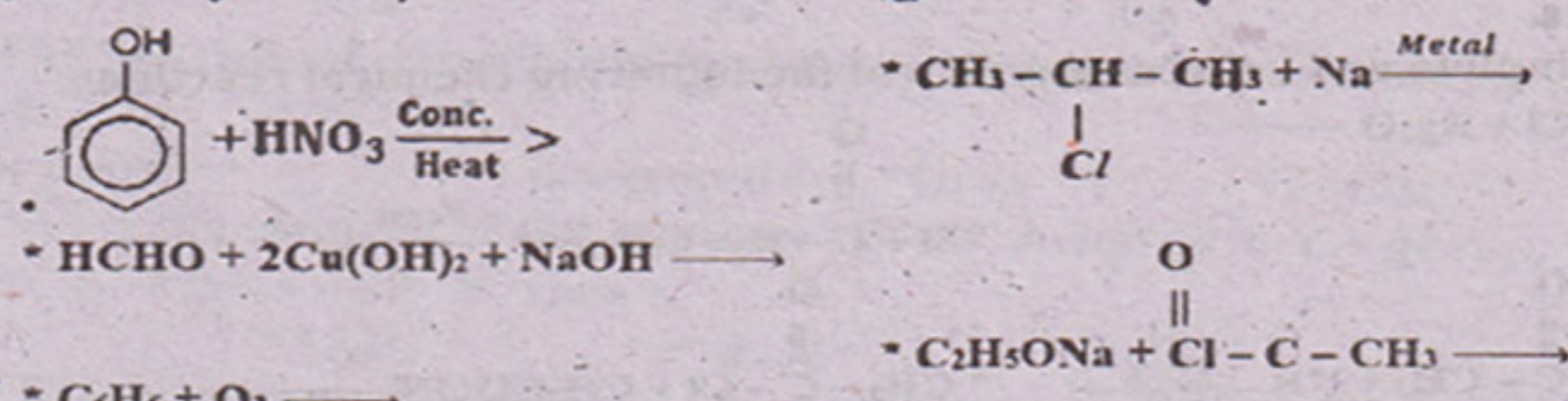
(ix) The structures of organic molecule (A and B) are shown below:



- * Draw the hybrid orbital structure of 'B' with number of Sigma and Pi bonds
- * Give a chemical reaction of 'A' with dilute alkaline solution of $KMnO_4$.
- * Give equation for preparation of A by the dehydration of ethanol.
- * Write the chemical equation when 'B' is passed over red hot tube.

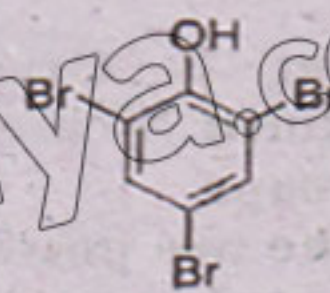
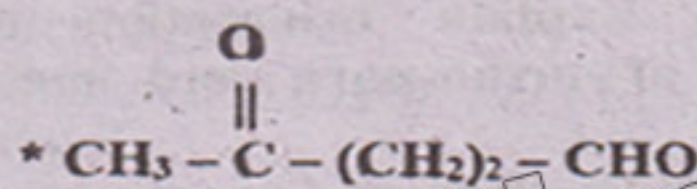
(x) What are Electrophiles? Give the reaction mechanism of Friedel Craft alkylation and sulphonation Benzene.

(xi) Complete any four of the following chemical equations.



(xii) Write IUPAC names any four of the following:

- * $(CH_3)_3C-(CH_2)_2-CH(CH_3)Cl$
- * $CH_3-CH(OH)-CH_2-COOH$



(xiii) What are Organometallic compounds? Give the chemical equation for the preparation of 1st, 2nd, 3rd alcohol from CH_3MgI .

(xiv) Write a note on any one of the following:

- * Detergents
- * Glass
- * Biological importance of carbohydrates

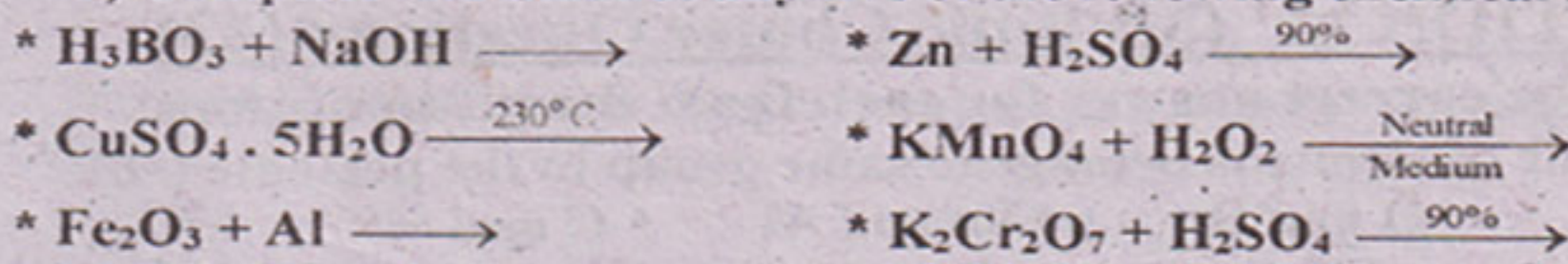
SECTION 'C' (Detailed Answer Questions)(20)

NOTE: Attempt any Two questions-One question from Inorganic Chemistry and other from Organic Chemistry. Both questions carry equal marks.

INORGANIC CHEMISTRY

3. a) Describe the industrial preparation of sulphuric acid by contact process.

b) Complete and balance any five of the following chemical reactions:



4. a) Describe the metallurgy of 99.99% copper from roasted pyrite ore.

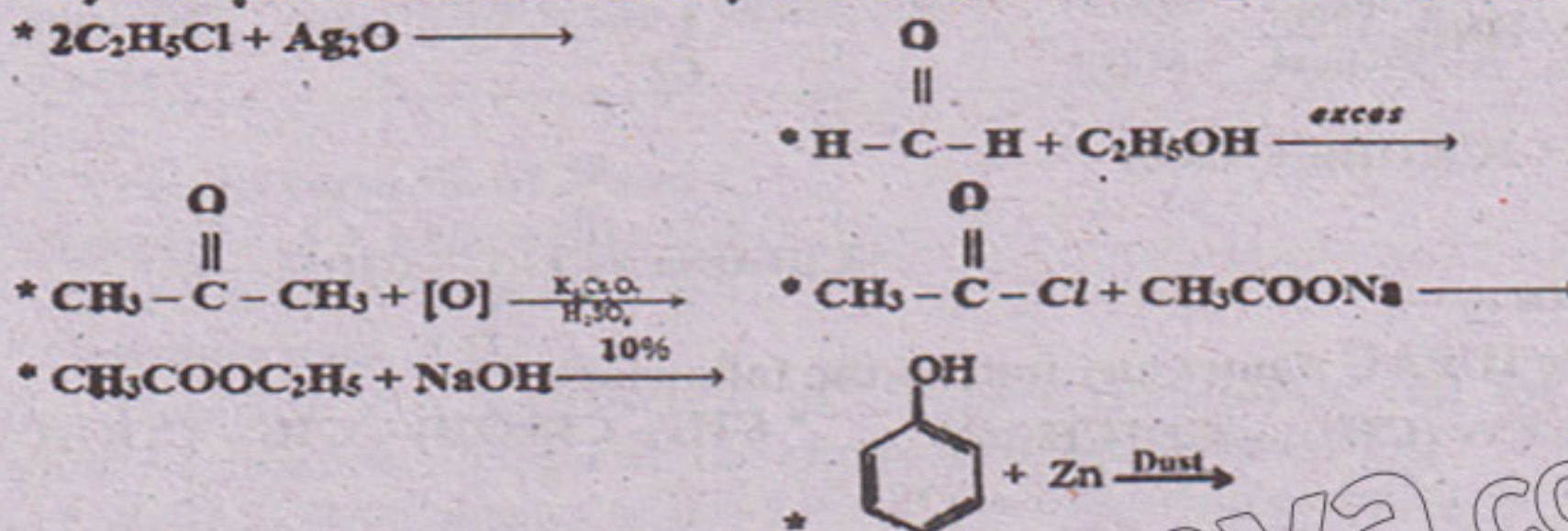
b) Describe the industrial preparation of soda ash by Ammonia Solvay process.

---OR---State Mendeleev periodic law. Describe the disadvantages of Mendeleev periodic table and how it is modified by Moseley.

ORGANIC CHEMISTRY

5. a) What is β - elimination reaction? Explain the mechanism of E_1 and E_2 reactions.

b) Complete and balance any five of the following chemical reactions:



6. a) What is Orientation in Benzene? Explain orientation in monosubstituted Benzene. Give the names of ortho-para and meta directing groups.

OR Write the two possible explanations for benzene behaves as saturated and unsaturated compounds? Describe Kekule structure.

6. b) Write the structural formulae of any five of the following:

- * Aspartic Acid
- * Nicotinic Acid
- * Pyrogallol
- * α - Naphthol
- * Isobutyric Acid
- * Glycerol