



Time : 3 hrs

Full marks : 75

Pass marks : 27

Group 'A'

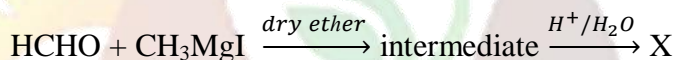
Attempt any fifteen questions. [15 x 2 = 30]

1. Starting from copper how would you obtain blue vitrol?
2. State mode of hybridization in carbon of acetylene? Write any two correct features of this hybridization.
3. Give an example each from analgesic and antipyretic drugs.
4. What are disaccharides? What happens when they get hydrolysed?
5. How is Rinman's green prepared? Give its one important use.
6. How is methoxybenzene prepared from phenol?
7. For the reaction :



Write the possible rate law expressions for the above reaction.

8. How would you predict the spontaneity using the relation? $T\Delta S_{\text{total}} = -\Delta G_{\text{sys}}$
9. Identify the product X in the reaction:



10. What is mean by Thomas Slag? Write its one use.
11. Write the monomers of
 - a. Nylon – 6,6
 - b. Bakelite
12. State Hess's law of constant heat summation.
13. What are the limitation of lewis acid and base?
14. How many columbs of electric charge are required to deposit?
 - i. 4.6 gm of solution
 - ii. 3 mole of aluminium
15. How would you convert 500cc of 2M H_2SO_4 into
 - i. Gram/ liter
 - ii. Normality
16. Write an example of Friedal Craft Acylation.
17. How would you convert chlorobenzene into i. DDT ii. Toulene
18. Why is boiling point of ethanol greater than that of ethoxyethane?
19. What happens when Benzoic acid is nitrated?
20. Write possible isomeric amines of $\text{C}_3\text{H}_9\text{N}$ and give their IUPAC names.
21. What happens when nitrobenzene is
 - i. Subjected to electrolytic reduction
 - ii. Treated with Zn/NaOH
22. Write an example of decarboxylation reaction.

GROUP 'B'

Attempt any five questions. [5 X 5 = 25]

23. Write down laboratory method of preparation of ethoxyethane.

24. A primary haloalkane(X) on dehydrohalogenation yields a compound (Y), which when reacted with HCN gives (Z). The compound (Z) on hydrolysis gives propanoic acid. Identify X,Y, and Z.
25. State Faraday's 2nd law of electrolysis. Equal amount of current was passed through an aqueous solution of trivalent metallic salt and dil. H₂SO₄. The volume of H₂ liberate was 96.5 ml at 27 ° C and 765 mm Hg 'pressure' and weight of metal deposited was 0.74gm. Calculate atomic weight of metal.
26. Define rate law. The reaction P+Q → Z is first order with respect to (P) and zero order with respect to (Q). If so, fill in the blanks in the following.

Experiment	[P] M	[Q] M	Initial rate of formation [Z] M m ⁻¹
I.	0.1	0.1	2x 10 ⁻²
II.	—	0.2	4x 10 ⁻²
III.	0.4	0.4	—
IV.	—	0.2	2x 10 ⁻²

27. Starting from trichloromethane, how would you prepare:
- Ethyne
 - Methane
 - Chloropicrin
 - Carbonyl chloride
 - Chloretone
28. Manufacture of steel by Open-Hearth Process.
29. Define free energy. Derive an expression to relate Gibbs free energy change with work.

GROUP 'C'

Attempt any Two questions. [2X 10 = 20]

30. How is nitrobenzene prepared in laboratory? Give its reduction in different media.

31. a) Consider a reaction $A \xrightarrow[\Delta]{pfr} B \xrightarrow{KCN} C \xrightarrow{H_2O/H^+} D \xrightarrow{P_2O_5} E$

The compound A is primary alcohol which gives positive iodoform test. Identify the organic A, B, C, D and E. Convert compound D into ethanoic acid.

- b) Write down suitable methods for conversion of
- ethanol to propanol
 - Chloroform to Dimethyl amine
32. State Ostwald's dilution law. What is the limitation of this law? Define the terms i) Ionic product of water ii) common ion effect iii) degree of ionization iv) pH value
33. Write short notes on any two.
- Faraday's law of electrolysis
 - Order and molecularity of reaction
 - Laboratory preparation of formic acid
 - Chemistry of zinc white.

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