COMMON HALF YEARLY EXAMINATION - 2024

* **Standard XII** Reg No

CHEMISTRY

Time : 3.00 hrs **Part - A** *Marks : 70*

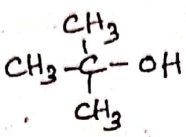
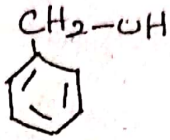
15 x 1 = 15

I. Choose the correct answer:

1. Bauxite has the composition
   a) $Al_2O_3.nH_2O$ b) $Fe_2O_3.2H_2O$ c) Al_2O_3 d) None of these
2. The vacant space in bcc lattice unit cell is
   a) 26% b) 48% c) 23% d) 32%
3. How many Faradays of electricity are required for the following reaction to occur $MnO_4^- \rightarrow Mn^{2+}$
   a) 7 F b) 5 F c) 3 F d) 1 F
4. Which of the following reagent can be used to convert nitrobenzene to aniline?
   a) Zn Hg / NaOH b) Zn / NH_4Cl c) Sn / HCl d) All of these
5. A complex in which the oxidation number of the metal is zero is
   a) $K_4[Fe(CN)_6]$ b) $[Fe(CN)_3 (NH_3)_3]$
   c) $Fe(Co)_5$ d) Both (b) and (c)
6. An aqueous solution of borax is
   a) Basic b) Neutral c) Amphoteric d) Acidic
7. Williamson synthesis of preparing dimethyl ether
   a) Electrophilic substitution reaction b) SN_1 reaction
   c) SN_2 reaction d) Electrophilic addition reaction
8. Fog is colloidal solution of
   a) liquid and gas b) solid in gas c) gas in liquid d) gas in gas
9. The transition element which has only +3 oxidation state is
   a) Ni b) Mn c) Cr d) Sc
10. Time required for the reactant concentration to reach one half of its initial value is called
    a) Half Life period b) First order
    c) Zero order d) Second order
11. The aqueous solution of sodium formate, anilinium chloride and potassium cyanide are respectively
    a) acidic, acidic, acidic b) acidic, acidic, basic
    c) basic, acidic, basic d) basic, neutral, basic
12. Assertion : P-N,N-dimethyl aminobenzaldehyde undergoes benzoin condensation
    Reason : The aldehydic (–CHO) group is meta directing.
    a) Both Assertion and Reason are false
    b) Both assertion and reason are true
    c) Assertion is true, but Reason is false
    d) Both Assertion and Reason are true, but Reason is not correct.
13. The medicinal value of drug is measured in terms of its
    a) Deoxyribose b) Gold number
    c) Therapeutic index d) Equilibrium constant
14. If one strand of the DNA has the sequence 'ATGCTTGA' then the sequence of complementary strand would be
    a) TACGRAGT b) TACGAACT c) TCCGAACT d) TACGTACT
15. Which one of the following is most basic?
    a) 2,4-dibromo aniline b) 2,4-dichloro aniline
    c) 2,4-dimethyl aniline d) 2,4-dinitro aniline

Part - B

II. Answer any 6 questions. (Q.No.24 is compulsory) 6 x 2 = 12

16. What is inert pair effect?
17. Which is more stable? Fe^{3+} or Fe^{2+} Why?
18. Give the uses of Borax.
19. Define coordination number.
20. Give examples for the first order reaction.
21. Write the dispersed phase and dispersed medium of butter.
22. Write a note on Electrophoresis.
23. Give the IUPAC names : a)  b) 
24. Identify A and B in the following sequence of reaction.

$$CH_3\text{–}Br \xrightarrow{NaN_3} A \xrightarrow{LiAlH_4} B + N_2$$

Part - C

III. Answer any 6 questions. (Q.No.33 is compulsory) 6 x 3 = 18

25. What are interhalogen compounds? Give examples.
26. What are the properties of interstitial compounds?
27. Write Arrhenius equation and explain the terms involved.
28. What are the factors that affects electrolytic conductance?
29. State Faraday's I and II law
30. Write any one method of preparation for diethyl ether.
31. How is chloropicrin prepared?
32. State any three advantages of food additives.
33. $[Ag(NH_3)_2]^+$ Write the following. a) Ligand b) Central metal ion c) IUPAC name

Part - D

IV. Answer all the questions. 5 x 5 = 25

34. a) Explain zone refining process. ***(OR)***
    b) i) What are catenation? Write any two conditions for catenation.
    ii) Why HF cannot be stored in glass bottles?
35. a) Write the postulates of Werner's theory. ***(OR)***
    b) i) How will you prepare bleaching powder? ii) Write a note on Frenkel defect
36. a) What is Lanthanoid contraction and what are the consequences of lanthanoid contraction. ***(OR)***
    b) Differentiate crystalline solids and amorphous solids.
37. a) Derive an expression of Nernst equation. ***(OR)***
    b) i) Give any three differences between chemisorption and physisorption.
    ii) What are the characteristics of catalyst?
38. a) i) Write a note on (1) Carbylamine reaction (2) Gabriel phthalimide synthesis ***(OR)***
    b) i) What is glycosidic linkage?
    ii) Identify A, B, C.

$$\text{Aromatic amine (A)} \xrightarrow[\text{273 - 278 K}]{HNO_2 \,/\, NaNO_2 + Con.HCl} \text{(B)} \xrightarrow{C_6H_5OH} \text{(C)}$$

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