HALF YEARLY EXAMINATION - 2024	12 - STD	
CHEMISTRY	Marks 70	Time 3.00 Hrs.

PART - I

I. Choose the correct answer. 15 x 1 = 15

1. Which of the following is used for concentrating ore in metallurgy?
   a) Leaching b) Roasting c) Froth floatation d) Both (a) and (c)
2. The stability of +1 oxidation state increase in the sequence
   a) $Al < Ga < In < Tl$ b) $Tl < In < Ga < Al$ c) $In < Tl < Ga < Al$ d) $Ga < In < Al < Tl$
3. The basicity of pyrophosphorous acid ($H_4P_2O_5$) is
   a) 4 b) 2 c) 3 d) 5
4. Permanganate ion changes to ..... in acidic medium.
   a) MnO_4^{2-} b) Mn^{2+} c) Mn^{3+} d) MnO_2
5. In $K_4[Fe(CN)_6]$, the co-ordination number of Fe^{2+} is .....
   a) 4 b) 2 c) 3 d) 6
6. Soild CO_2 is an example of
   a) Covalant solid b) mettalic solid c) molecular solid d) ionic soild
7. The addition of a catalyst during a chemical reaction alters which of the following quantities?
   a) Enthalpy b) Activation energy c) Entropy d) Internal energy
8. The pH of 10^{-5} M KoH solution will be
   a) 9 b) 5 c) 19 d) none of these
9. During the electrolysis of molten sodium chloride, the time required to produce 0.1 mol of chlorine gas using a current of 3A.
   a) 55 minutes b) 107.2 minutes c) 220 minutes d) 330 minutes
10. Which one of the following is correctly matched?
    a) Emulsion - smoke b) Gel - butter c) foam - mist d) whipped cream - sol.
11. Which of the following compound can be used as antifreeze in automobile radiators?
    a) methanol b) Ethanol c) Neopentyl alcohol d) ethan-1,2-diol
12. Assertion : 2, 2-dimethyl propanoic acid does not give HVZ reaction.
    Reason : 2, 2-dimethyl propanoic acid does not have α - hydrogen atom.
    a) if both assertion and reason are true and reason is the correct explanation of assertion.
    b) if both assertion and reason are true but reason is not the correct explanation of assertion
    c) assertion is true but reason is false
    d) both assertion and reason are false
13. The order of basic strength for methyl substituted amines in aqueous solution is
    a) $N(CH_3) > N(CH_3)_2H > N(CH_3)H_2 > NH_3$ b) $N(CH_3)H_2 > N(CH_3)_2H > N(CH_3)_3 > NH_3$
    c) $NH_3 > N(CH_3)H_2 > N(CH_3)_2H < NH_3$ d) $N(CH_3)_2H > N(CH_3)H_2 > N(CH_3)_2H > N(CH_3)_3$
14. Complete hydrolysis of cellulose gives
    a) L - glucose b) D - Fructose c) D - Ribose d) D - glucose
15. Nylon is an example of
    a) polyamide b) polythene c) polyester d) poly saccharide

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

16. Give the limitation of Ellingham diagram.
17. What are the properties of inter halogen compounds?
18. Aniline does not undergo Friedel - Crafts reaction. Why?
19. Why ionic crystals are hard and brittle?
20. Write Arhenius equation and explain the terms involved.

21. State Kohlrausch law.
22. What is Tyndall effect?
23. What is urotropine? Give its use.
24. Draw the structure of D (+) glucose.

III. Answer any six question. Q.No. 33 is compulsory. **6 x 3 = 18**

25. What are diffences between minerals and ores?
26. Give the uses of silicones.
27. Give the differences between double salts and coordination compounds.
28. Explain pseudo first order reaction with an example.
29. Write a note on Frenkal defect.
30. What will be the product (X and Y) for the following reactions?

$$\text{acetyl chloride} \xrightarrow[\text{(ii) } H_3O^+]{\text{(i) } CH_3MgBr} X \xrightarrow{\text{acid } K_2Cr_2O_7} Y$$

31. Explain Aldol condensation reaction.
32. Write a note on vulcanisation of rubber.
33. Calculate the pH of 0.1 M CH^3COOH solution. (Dissociation constant of acetic acid is 1.8×10^{-5} M)

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

34. a) i) Explain zone refining process with an example. (3)
    ii) What is inert pair effect? (2)

(OR)

b) i) Write a short note on anamolous properties of the first element of p-block. (2)
   ii) What is lanthanide contraction? What are the effects of lanthanide contraction? (3)

35. a) Write the postulates of werner's theory. (5)

(OR)

b) i) Calculate the number of atoms in a BCC unit cell. (2)
   ii) What are the molecular solids? Give examples. (3)

36. a) A → product, Derive integrated representation of first order reaction. (5)

(OR)

b) Derive an expression for oswald's dilution law. (5)

37. a) i) Write a note on sacrificial protection. (2)
    ii) Differentiate physisorption and chemisorption. (3)

(OR)

b) Write note on
   i) Cannizaro reaction (2½) ii) Gomberg reaction (2½)

38. a) Elucidate the structure of glucose. (5)

(OR)

b) How will you distinguish between primary, secondary and teritary aliphatic amines.(5)