PART - I

1. **Which of the following amino acids are achiral ?**
   (a) Proline (b) Alanine
   (c) Glycine (d) Leucine
2. **$HO-CH_2-CH_2-OH$ on heating with periodic acid gives :**
   (a) Methanal (b) Methanoic acid
   (c) CO_2 (d) Glyoxal
3. **An aqueous solution of borax is :**
   (a) basic (b) neutral
   (c) amphoteric (d) acidic
4. **The crystal with a metal deficiency defect is :**
   (a) ZnO (b) NaCl
   (c) KCl (d) FeO
5. **Which one of the following is an example for homogeneous catalysis ?**
   (a) Hydrogenation of oil
   (b) Manufacture of ammonia by Haber's process
   (c) Hydrolysis of sucrose in presence of dil. HCl
   (d) Manufacture of sulphuric acid by Contact process
6. **Which of the following reagent can be used to convert nitrobenzene to aniline ?**
   (a) $ZnHg/NaOH$ (b) Zn/NH_4Cl
   (c) Sn/HCl (d) All of these
7. **Faraday constant is defined as :**
   (a) Charge required to deposit one mole of substance
   (b) Charge carried by 1 electron
   (c) Charge carried by 6.22×10^{10} electrons
   (d) Charge carried by one mole of electrons
8. **Bauxite has the composition :**
   (a) $Al_2O_3 \cdot nH_2O$
   (b) $Fe_2O_3 \cdot 2H_2O$
   (c) Al_2O_3
   (d) None of the above
9. **If 75% of a first order reaction was completed in 60 min, 50% of the same reaction under the same conditions would be completed in :**
   (a) 35 minutes (b) 20 minutes
   (c) 75 minutes (d) 30 minutes
10. **Which of the following can act as Lowry-Bronsted acid as well as base ?**
    (a) HPO_4^{2-} (b) HCl
    (c) Br^- (d) SO_4^{2-}
11. **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)
12. **Which of the following oxidation states is most common among the lanthanoids ?**
    (a) +5 (b) +4
    (c) +3 (d) +2
13. **An element belongs to group-15 and 3rd period of the periodic table. Its electronic configuration would be :**
    (a) $1\,s^2 2\,s^2 2p^6 3\,s^2 3p^2$
    (b) $1\,s^2 2\,s^2 2p^4$

(c) $1\ s^2 2\ s^2 2p^6 3\ s^2 3p^3$

(d) $1\ s^2 2\ s^2 2p^3$

14. Fog is colloidal solution of :

(a) liquid in gas (b) solid in gas

(c) gas in liquid (d) gas in gas

15. The formation of cyanohydrin from acetone is an example of :

(a) electrophilic addition

(b) nucleophilic substitution

(c) nucleophilic addition

(d) electrophilic substitution

PART – II

16. What are the differences between minerals and ores ?

17. Which is more stable Fe^{3+} or Fe^{2+} ? Why ?

18. Define Coordination number.

19. Define covalent solids.

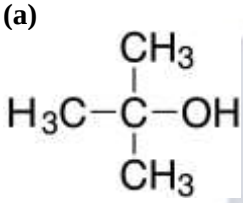
20. Give examples for the first order reaction.

21. What are the limitations of Arrhenius concept ?

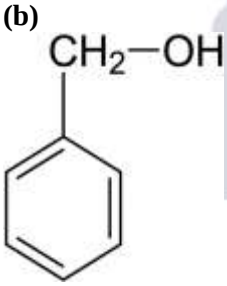
22. Write a note on Electrophoresis.

23. Give the IUPAC names :

(a)



(b)



24. Identify A and B in the following sequence of reactions.

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

PART – III

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. What is homogeneous catalysis ? Give example.

30. Write any one method of preparation for diethyl ether.

31. Write Haloform reaction.

32. What are Epimers ? Give example.

33. Write the following for the complex $[Ag(NH_3)_2]^+$.

(a) Ligand **(b)** Central metal ion **(c)** IUPAC name

PART – IV

34. (a) (i) Write a note on gravity separation method.

(ii) Explain the Mond's Process of refining nickel.

OR

(b) (i) What is inert pair effect ?

(ii) What are the uses of boric acid ?

35. (a) (i) What are the uses of oxygen ?

(ii) How wili you prepare bleaching powder ?

OR

(b) Write the postulates of Werner's Theory.

36. (a) Differentine crystalline solides and amorphous solide.

OR

(b) (i) Define pH.

(ii) Explain common ion effect with example.

37. (a) Derive an expression for Nernst equation.

OR

(b) What are the characteristics of catalyst ?

38. (a) Explain the reducing action of formic acid with example.

OR

(b) Write a note on :

(i) Carbylamine reaction

(ii) Gabriel phthalimide synthesis