Class : 12

Register Number

SECOND REVISION EXAMINATION -2025

Time Allowed : 3.00 Hours] **CHEMISTRY** [Max. Marks : 70

PART – I

I. **Choose the correct answer.** 15x1=15

1. Considering Ellingham diagram, which of the following metals can be used to reduce alumina?
   a) Fe b) Cu c) Mg d) Zn
2. The geometry at which carbon atom in diamond are bonded to each other is
   a) Tetrahedral b) hexagonal c) Octahedral d) none of these
3. On hydrolysis, PCl_5 gives
   a) H_3PO_3 b) PH_3 c) H_3PO_4 d) PCl_3
4. Which one of the following ions has the same number of unpaired electrons as present in V^{3+}?
   a) Ti^{3+} b) Fe^{3+} c) Ni^{2+} d) Cr^{3+}
5. A complex in which the oxidation number of the metal is zero is
   a) $[Co(en)_3]cl_3$ b) $[Co(NH_3)_4(Cl)]^+_2$ c) $[Fe(CO)_5]$ d) $[Co(NH_3)_5Cl]SO_4$
6. Schottky defect in a crystal is observed when
   a) unequal number of anions and cations are missing from the lattice
   b) equal number of cations and anions are missing from the lattice
   c) an ion leaves its normal site and occupies an interstitial site
   d) no ion is missing from its lattice.
7. A zero order reaction X → Product , with an initial concentration 0.02M has a half life of 10 min. if one starts with concentration 0.04M, then the half life is
   a) 10 s b) 5 min c) 20 min
   d) cannot be predicted using the given information
8. The P^{OH} of 10^{-5}M KOH solution will be
   a) 9 b) 5 c) 19 d) none of these
9. **Assertion** : pure iron when heated in dry air is converted with a layer of rust.
   Reason : Rust has the composition Fe_3O_4
   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.
10. Aerosol spray is colloidal solution of
    a) solid in gas b) gas in gas c) liquid in gas d) gas in liquid
11. Which one of the following is the strongest acid
    a) O - nitrophenol b) P – chlorophenol
    c) P– nitrophenol d) m – nitrophenol
12. Benzoic acid $\xrightarrow[\Delta]{NH_3}$ A $\xrightarrow{NaOBr}$ B $\xrightarrow{NaNO_2/HCl}$ C 'B' is
    a) anilinium chloride b) O – nitro aniline
    c) benzene diazonium chloride d) amino benzene
13. Which of the following amines do undergo acetylation?
    a) t - butyl amine b) ethylamine c) diethylamine d) all the above
14. Which of the following vitamins is water soluble?
    a) Vitamin E b) Vitamin K c) Vitamin A d) Vitamin B

15. Natural rubber has
    a) alternate cis- and trans-configuration
    b) random cis- and trans-configuration
    c) all cis-configuration
    d) all trans-configuration

PART – II

II. Answer any Six questions. Question No.24 is compulsory. **6x2=12**

16. Which type of ores can be concentrated by froth floatation method? Give two examples for such ores.
17. What is royal water? Mention its uses.
18. What is crystal field splitting energy?
19. Define half life of a reaction.
20. Define P^H.
21. State Kohlrausch Law.
22. Write a note on trans esterification.
23. How is terylene prepared?
24. Nitro Benzene $\xrightarrow[Con.H_2SO_4]{con.HNO_3}$ $\xrightarrow{473K}$ A, $\xrightarrow{373K}$ B

PART - III

III. Answer any Six questions. Question No.33 is compulsory. **6x3=18**

25. Write a note on Fisher tropsch synthesis.
26. Compare lanthanides and actinides.
27. What are hydrate isomers? Explain with an example.
28. Give any three charcteristics of ionic crystals.
29. Write a note on catalytic poison. With an example.
30. How phenolphthalein is prepared from phenol?
31. How will you convert phenyl methanal to benzoin?
32. Give any three differences between DNA and RNA.
33. A saturated solution, prepared by dissolving CaF_2 (s) in water, has $[Ca^{2+}]=3.3 \times 10^{-4}$M. What is the Ksp of CaF_2

PART - IV

IV. Answer All the questions. **5x5=25**

34. a) i) Describe a method for the refining nickel.
    ii) Write a short note on hydroboration. **(OR)**
    b) i) Give a reaction between nitric acid and a basic oxide.
    ii) Give the uses of helium.
35. a) Describe the preparation of potassium dichromate. **(OR)**
    b) Explain the assumptions of Crystal field theory (CFT).
36. a) Calculate the percentage efficiency of packing in case of face centered cubic crystal.

    (OR)

    b) i) Give the differences between order and molecularity of a reaction.
    ii) Discuss the lowry-Bronsted concept of acids and bases.
37. a) Derive an expression for Nernst equation. **(OR)**
    b) Describe adsorption theory of catalysis.
38. a) i) How will you prepare the following using Grignard reagent.
    1. t-butyl alcohol
    2. phenyl methanol
    ii) Write a note on diazotisation reaction.

    (OR)

    b) i) Discuss the importance of proteins.
    ii) How do antiseptic differ from disinfectants?