XII - SET2

COMMON QUARTERLY EXAMINATION – 2025

Standard XII

Reg.No.: | | | | | | |

25.9.25

CHEMISTRY

Time: 3.00 hrs. **Part - I** **Marks: 70**

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

1. Which of the following plot gives Ellingham diagram?
   a) ΔS Vs T b) ΔG^o Vs T c) ΔG^o Vs $\frac{1}{T}$ d) ΔG^o Vs T^2
2. Which of these is not a monomer for a high molecular mass silicone polymer?
   a) Me_3SiCl b) $PhSiCl_3$ c) $MeSiCl_3$ d) Me_2SiCl_2
3. XeF_6 on complete hydrolysis produces
   a) $XeOF_4$ b) XeO_2F_2 c) XeO_3 d) XeO_2
4. In acid medium, potassium permanganate oxidizes oxalic acid to
   a) oxalate b) carbon dioxide c) acetate d) acetic acid
5. Assertion : Due to Frankel defect, density of the crystalline solid decreases
   Reason : In Frankel defect cation and anion leaves the crystal
   a) Both assertion and reason are true and reason is the correct explanation of assertion
   b) 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
6. If the initial concentration of the reactant is doubled, the time for half reaction is also doubled. Then the order of the reaction is
   a) zero b) one c) fraction d) none
7. The pH of 10^{-5}M KOH solution will be
   a) 9 b) 5 c) 19 d) None of these
8. Among the following ethers which one will produce methyl alcohol on treatment with hot HI?
   a) $(CH_3)_3C-O-CH_3$ b) $(CH_3)_2CH-CH_2-O-CH_3$
   c) $CH_3-(CH_2)_3-O-CH_3$ d) $CH_3-CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-O-CH_3$
9. In which of the following reactions new carbon-carbon bond is not formed?
   a) Aldol condensation b) Friedel craft reaction
   c) Kolbe's reaction d) Wolf Kishner reduction
10. Which is used as moderator in nuclear reactors?
    a) boron nitride b) boron c) borax d) boric acid
11. The compounds used in Holme's signal are
    a) CaC_2 and Ca_3P_2 b) Al P and Ca_3P_2
    c) CaC_2 and P_4 d) Al P and P_4
12. The transition element which has only +3 oxidation state is
    a) Ni b) Mn c) Cr d) Sc
13. The time required for 99.9% completion of a first order reaction is equal to
    a) 2 $t_{1/2}$ b) 5 $t_{1/2}$ c) 10 $t_{1/2}$ d) 100 $t_{1/2}$
14. Which of the following is the strongest base?
    a) Cl^- b) SO_4^{2-} c) CH_3COO^- d) NO_3^-
15. The IUPAC name of acrolein is
    a) ethanol b) but-2-enal c) prop-2-enal d) but-1-enal

Part - II

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

16. What are the difference between minerals and ores?
17. How will you convert boric acid to boron nitride?
18. Give the uses of argon.
19. Why do transition elements and its compounds act as catalyst?
20. What is primitive unit cell?
21. Write the expression for the solubility product of $Ca_3(PO_4)_2$
22. Write the bromination reaction of anisole.
23. What is urotropine? How is it prepared?
24. For a reaction X + Y + Z → Products the rate law is given by rate = $k[X]^{3/2}[Y]^{1/2}$. What is the overall order of the reaction and what is the order of the reaction with respect to 'Z'.

Part - III

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

25. Explain how gold ore is leached by cyanide process.
26. Write the uses of aluminium chloride.
27. Mention the characteristic of interhalogen compounds.
28. Which is stronger reducing agent Cr^{2+} or Fe^{2+}? Explain.
29. Calculate the number of atoms in a fcc unit cell.
30. Give the examples for zero order reaction.
31. What is buffer index (β) ?
32. How is picric acid prepared?
33. How will you prepare Malachite green from benzaldehyde.

Part - IV

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

34. a) Explain zone refining process with an example. ***(OR)***
    b) i) Give the uses of silicones (3 m)
    ii) Write a note on Fisher Tropsch synthesis. (2 m)
35. a) i) What is the hybridisation of Iodine in IF_7? Give its structure. (2 m)
    ii) Give a reason to support that sulphuric acid is a dehydrating agent. (3 m)
    (OR)
    b) i) Write the electronic configuration of Ce^{4+} and Co^{2+}. (2 m)
    ii) Compare Lanthanides and Actinoides. (3 m)
36. a) Write short note on metal excess and metal deficiency defect with an example.
    (OR)
    b) Derive integrated rate law for a first order reaction.
37. a) i) What are Arrhenius acids and bases. Give examples. (2 m)
    ii) Write the relationship between ionic product and solubility product. (3 m)
    (OR)
    b) i) Write the reaction of nitrating mixture with the following compounds :
    (i) Ethylene glycol (ii) Glycerol
38. a) Compound 'A' of molecular formula C_7H_6O reduces Tollen's reagent. When 'A' reacts with 50% NaOH gives compound 'B' of molecular formula C_7H_8O and 'C' of molecular formula $C_7H_5O_2Na$. Compound 'C' on treatment with dil.HCl gives compound 'D' of molecular formula $C_7H_6O_2$. When 'D' is heated with sodalime gives compound 'E'. Identify A,B,C,D & E. Write the corresponding equations.
    (OR)
    b) Write a note on : (i) Claisen-Schmidt condensation (ii) Etard reaction

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