Class : 12

Register Number

COMMON QUARTERLY EXAMINATION 2024-25

CHEMISTRY

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

PART – I

15x1=15

I. Choose the correct answer.

1. The metal oxide which cannot be reduced to metal by Carbon is
   a) PbO b) Al_2O_3 c) ZnO d) FeO
2. Carbon Atom is fulleren with formula C_{60} have
   a) Sp^3 Hybridised b) Sp Hybridised
   c) Sp^2 Hybridised d) Partially Sp^2 and Partially Sp^3 Hybridised
3. Which is used as a Styptic agent to arrest bleeding?
   a) Aluminium Chloride b) Potash Alum
   c) Silicones d) Borax
4. **Assertion** : Bond Association energy of Fluorine is greater than Chlorine Gas.
   Reason : Chlorine has more Electronic Repulsion than fluorine.
   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
5. What is the Hybridisation of Xenon in $XeOF_4$
   a) Sp^3d^2 b) Sp^3d c) Sp^3 d) Sp^3d^3
6. The Magnetic moment value of Mn^{2+} ion is
   a) 5.92 BM b) 2.80 BM c) 8.95 BM d) 3.90 BM
7. Permanganate ion is converted into ---------- ion in acid medium.
   a) Mn^{7+} b) Mn^{5+} c) Mn d) Mn^{2+}
8. CsCl has BCC arrangement, its unit cell length is 400 pm, its inter atomic distance is
   a) 400 pm b) 800 pm c) $\sqrt{3}$ x 100 pm d) $\left(\frac{\sqrt{3}}{2}\right)$ x 400 pm
9. The half life period of a radioactive element is 140 days. After 560 days, 1 g of element will be reduced to
   a) $\left(\frac{1}{2}\right)$ g b) $\left(\frac{1}{4}\right)$ g c) $\left(\frac{1}{8}\right)$ g d) $\left(\frac{1}{16}\right)$ g
10. The Order of an acid hydrolysis of an ester is
    a) I order b) Zero Order c) Pseudo I order d) II order
11. H_3PO_4 the conjugate base of
    a) PO_4^{3-} b) P_2O_5 c) H_3PO_4 d) HPO_4^{2-}
12. $(CH_3)_3C^+$ is a/an ----------
    a) Lewis acid b) Lewis base c) Neutral d) None of these
13. Which one of the following is the strongest acid.
    a) 2 - nitrophenol b) 4 - Chlorophenol c) 4 - nitrophenol d) 3 - nitrophenol
14. On reacting with Neutral ferric Chloride, Phenol gives.
    a) Red Colour b) Violet Colour c) Dark green Colour d) No Colouration
15. Benzoic acid $\xrightarrow[ii)\ \Delta]{i)\ NH_3}$ A $\xrightarrow{NaOBr}$ B $\xrightarrow{NaNO_2Br/HCl}$ C, 'C' is
    a) Anilinium Chloride b) O - Nitro aniline
    c) Benzene Diazonium Chloride d) m - Nitro benzoic acid

PART - II

II. Answer any six questions of the following. Question No. 24 is compulsory. 6x2=12

16. Which type of Ores can be concentrated by Froth Floation method? Give two examples for such Ores.
17. Write a note on Fisher Tropsch Synthesis.
18. What is Inert Pair Effect?

19. Transition metal (shows) high melting points. Why?
20. What is meant by the term "Co Ordination number"? What is the Coordination number of atom in a bcc Structure?
21. Explain the effect of Catalyst on Reaction (rate) with an example.
22. Explain Common ion effect with an example.
23. Write a note on Coupling Reaction. (Dye Test)
24. Identify A & B

$$CH_3CH_2OH \xrightarrow[[O]]{H^+/K_2CrO_4} [A] \xrightarrow[[O]]{} [B]$$

PART - III

III **Answer any six questions of the following. Question No. 33 is compulsory.** **6x3=18**

25. Explain the following Terms with suitable examples.
    i) Gangue ii) Slag
26. Write a note on Zeolites.
27. Give the uses of (Phosphine) (Homles Signal)
28. What are Interstitial Compounds? Write any two properties of Interstitial Compounds.
29. Distinguish Tetrahedral and Octahedral Voids.
30. Derive Henderson - Hasselbalch Equation.
31. Write a note on : i) Phthalein Reaction ii) Friedel Crafts Reaction
32. How will you prepare the following Compounds from Benzaldehyde?
    i) Malachitegreen ii) Cinnamic Acid
33. Show that in case of First order reaction, the time required for 99.9% completion is nearly ten times the time of required for Half Completion of the reaction.

PART - IV

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

34. (a) Explain Zone refining process with an example. (5)

(OR)

(b) i) Give the uses of Borax. (2)
    ii) Give the Structure of CO and CO_2. (3)

35. (a) Complete the following Reaction.
    i) $P_4 + NaOH + H_2O \longrightarrow$ (2)
    ii) $SiO_2 + HF \longrightarrow$ (2)
    iii) $C_2H_5OH + PCl_5 \longrightarrow$ (1)

(OR)

(b) Compare Lanthanides and Actinides. (5)

36. (a) i) Write a note on Metal Excess and Metal deficiency defect with an example.(3)
    ii) Calculate the number of Atoms in FCC unit cell. (2)

(OR)

(b) Derive Integrated Rate law of I order reaction A → product. (5)

37. (a) (i) What are the limitations of Arrhenius Concept. (2)
    (ii) Define Ionic Product of Water.Give its value at Room Temperature. (3)

(OR)

(b) How will you prepare the following Compounds.
    i) Acrolein **(1½)** ii) 1,4 - dioxane **(1½)** iii) Anisole **(2)**

38. (a) Write note on i) Transesterification **(2½)** ii) Wolf Kishner Reduction **(2½)**

(OR)

(b) i) What are the various steps involved in Extraction of Pure metals from their Ores?
    ii) Write a note on Frenkel Defect. (3)