Class : 12

Register Number

COMMON HALF YEARLY EXAMINATION 2024-25

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

PART – I

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

1. Flux is a substance which is used to convert
   a) Mineral into Silicate b) Infusible impurities to soluble impurties
   c) Soluable imputies to infusible impurites d) All of these
2. In Diborane, the number of electrons that account for banana bond is
   a) Six b) Two c) Four d) Three
3. When Copper, is heated with conc. HNO_3 it produces
   a) Cu $[NO_3]_2$, NO and NO_2 b) Cu $[No_3]_2$ and N_2O
   c) Cu $[NO_3]_2$ and NO_2 d) Cu $[No_3]_2$ and NO
4. --------- is used for the treatment of skin infections and fungal infection.
   a) Potassium dichromate b) Potassium Chromate
   c) Potassium Permanganate d) Chromium
5. IUPAC name of $[Ag(NH_3)_2^+]$ is
   a) Di ammine Silver (ii) ion b) Di ammine Silver (i) ion
   c) Di ammine Argentate (i) ion d) Di ammine Argentate (ii) ion
6. CsCl has bcc arrangement, its unit cell edge length is 400pm, its inter atomic distance is
   a) 400 pm b) 800 pm c) $\sqrt{3}$x100 pm d) $\frac{\sqrt{3}}{2}$ x 400 pm
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. Which of the following Compound is most likely to bahave as a Lewis base?
   a) BF_3 b) PF_3 c) CF_4 d) SiF_4
9. In Leclanche cell the hydrogen gas is oxidized to water by
   a) Zn b) Graphite c) MnO_2 d) NH_4Cl
10.

Column- I	Column - II
a) I_2 sol	i) Hydrolysis
b) Gold Sol	ii) Oxidation
c) Hydroxide Sol	iii) Double Decomposition
d) Water insoluble Sol	iv) Reduction

   a) a - ii, b - iv, c- i, d - iii b) a - i, b - ii, c- iii, d - iv
   c) a - iv, b - iii, c- ii, d - i d) a - iii, b - i, c- iv, d - ii
11. Glycerol reates with $KHSO_4$ to produce
   a) Acrolein b) Oxalic Acid c) Formaldehyde d) Tartaric Acid
12. $CH_3Br \xrightarrow{KCN} (A) \xrightarrow{H_3O^+} (B) \xrightarrow{PCl_5} (C)$ Product (C) is
   a) Acetyl chloride b) Chloro acetic Acid
   c) α - Chloro cyano ethanoic acid d) None of these
13. Nitration of Nitro benzene at 473 K results in
   a) O - diNitrobenzene b) 1,3 Di Nitrobenzene
   c) 1,3,5 - Tri Nitro benzene d) 1,4 Di Nitro benzene
14. If one stand of the DNA has the Sequences 'ATGCTTGA' then the sequence of of complementary stand would be
   a) TACGAACT b) TCCGAACT
   c) TACGTACT d) TACGRACT
15. The Polymer used in making blankets is
   a) Polystyrene b) PAN c) Polyester d) Polythene

PART - II

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

16. Explain Auto Reduction?
17. Give the Uses of Neon?
18. What are the Limitations of VB theory?
19. Define Ionic Product of Water? Give its value at Room Temperature?
20. Why does conductivity of a solution decrease on dilution of the solution?
21. Write any three tests to differentiate Alcohols and Phenols.
22. Write Gomberg Reaction.
23. Give a brief account on Antioxidants?
24. If the Rate constant of a first order reaction is $1.54 \times 10^{-3} s^{-1}$, Calculate its half life Period.

PART - III

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

25. Give the Structure of CO and CO_2 ?
26. What is Lanthanoid contraction? Explain its consequences?
27. What is Linkage isomerism? Explain with an Example?
28. What is meant by the term Co- Ordination Number? What is the coordination number of atoms in a Structure?
29. Give Examples for First order Reaction?
30. Difference between Chemisorption and Physisorption?
31. How will you convert Benzaldehyde into the following Compounds?
    i) Cinnamic acid ii) Malachite green
32. How is RNA molecules classified ? Explain their functions?
33. **Identify A and B**

i) A $\xrightarrow[4\,[H]]{Na(Hg)/C_2H_5OH}$ $CH_3 - CH_2 - NH_2$

ii) B $\xrightarrow[4\,[H]]{Na(Hg)/C_2H_5OH}$ $CH_3 - CH_2 - NH_2$

PART - IV

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

34. (a) Explain Zone Refining Process with an Example? **(5)**

(OR)

(b) i) What is mean by burnt Alum? **(2)**
ii) Explain Deacon's process for Manufacture of Chlorine. **(3)**

35. (a) $[Ni(Cn)_4]^{2-}$ is diamagnetic, while $[Cr(NH_3)_6]^{3+}$ is Paramagnetic. Explain **(5)**

(OR)

(b) Explain the Schottky defect and Frenkel Defect. **(5)**

36. (a) Derive an expression for Henderson-Hasselbalch Equation.

(OR)

(b) i) Write a note on Sacrificial Protection. **(3)**
ii) What is Brownian movement? **(2)**

37. (a) (i) Write Reimer - Tiemann reaction. **(2)**
(ii) What happens when Diethyl Ether react. with a) Excess HI and (b) Cl_2 / Sun light. **(3)**

(OR)

(b) i) Write the Mechanism for Aldol condensation of Acetaldehyde? **(5)**

38. (a) i) Write a short note on Peptide Bond. **(2)**
ii) How is Buna - S Prepared? **(3)**

(OR)

b) **Identify Compounds A , B , C , D and E**

Aromatic Hydrocarbon $\xrightarrow[AnhyAlCl_3]{CH_3Cl}$ (A) $\xrightarrow[KMnO_4/H^+]{O}$ (B) $\xrightarrow[\Delta]{NH_3}$ (C) $\xrightarrow[KOH]{Br_2}$ (D) $\xrightarrow[273K - 278K]{HNO_2/HCl}$ (E)