

Class : 12

Register  
Number**SECOND MID TERM TEST - 2023**

Time Allowed : 1.30 Hours]

**CHEMISTRY**

[Max. Marks : 50

**PART - I**

(i) Answer all the questions.

(ii) Choose the correct answer.

10x1=10

- Which one of the following complexes is not expected to exhibit isomerism?
  - $[\text{Ni}(\text{NH}_3)_4(\text{H}_2\text{O})_2]^{2+}$
  - $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$
  - $[\text{Co}(\text{NH}_3)_5\text{SO}_4]\text{Cl}$
  - $[\text{FeCl}_6]^{3-}$
- Which of the following is paramagnetic in nature?
  - $[\text{Zn}(\text{NH}_3)_4]^{2+}$
  - $[\text{Co}(\text{NH}_3)_6]^{3+}$
  - $[\text{Ni}(\text{H}_2\text{O})_6]^{2+}$
  - $[\text{Ni}(\text{CN})_4]^{2-}$
- How many geometrical isomers are possible for  $[\text{Pt}(\text{Py})(\text{NH}_3)(\text{Br})(\text{Cl})]$ ?
  - 3
  - 4
  - 0
  - 15
- Co-ordination number of Co in  $[\text{Co}(\text{C}_2\text{O}_4)_3]^{3-}$ 
  - 2
  - 3
  - 4
  - 6
- The number of electrons that have a total charge of 9650 coulombs is
  - $6.22 \times 10^{23}$
  - $6.022 \times 10^{24}$
  - $6.022 \times 10^{22}$
  - $6.022 \times 10^{-34}$
- How many faradays of electricity are required for the following reaction to occur  $\text{MnO}_4^- \rightarrow \text{Mn}^{2+}$ 
  - 5F
  - 3F
  - 1F
  - 7F
- The emf of Daniel cell is
  - 1.0V
  - 1.10V
  - 2V
  - 3V
- Which one of the following will not undergo Hoffmann bromamide reaction?
  - $\text{CH}_3\text{CONHCH}_3$
  - $\text{CH}_3\text{CH}_2\text{CONH}_2$
  - $\text{CH}_3\text{CONH}_2$
  - $\text{C}_6\text{H}_5\text{CONH}_2$
- Secondary nitro alkanes react with nitrous acid to form
  - Red solution
  - Blue solution
  - Green solution
  - Yellow solution
- $\text{CH}_3 - \text{CH} = \text{N} - \text{OH} \xrightarrow{\text{P}_2\text{O}_5} \text{X}$ . What is X.
  - $\text{CH}_3\text{CHO}$
  - $\text{CH}_3\text{NC}$
  - $\text{CH}_3\text{CN}$
  - $\text{CH}_3\text{CNO}$

**PART - II**

Answer any Five questions. Q.No. 18 is compulsory.

5x2=10

- Define coordination number?
- $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$  is coloured, while  $[\text{Sc}(\text{H}_2\text{O})_6]^{3+}$  is colourless - Explain.

KK/12/Che/1

13. Give an example for primary and secondary batteries?
14. Why does conductivity of a solution decrease on dilution of the solution.
15. Define molar conductance?
16. Write functional isomers of  $\text{CH}_3\text{NO}_2$ ?
17. Write short notes on Diazotisation?
18. Calculate the magnetic moment of  $[\text{CoF}_6]^{2-}$ .

## PART- C

Answer any Five questions. Q. no. 26 is compulsory.

5x3=15

19. Classify the following ligand based on the number of donor atoms.

a)  $\text{NH}_3$                       b) en                      c)  $\text{OX}^{2-}$

20. What are Hydrate isomers? Explain with an example.

21. State Kohlraush Law.

22. State Faraday's Laws of electrolysis.

23. Write short notes on Gabriel Phthalimide Synthesis.

24. Explain Carbylamine reaction.

25.  $\text{C}_6\text{H}_5\text{N}_2\text{Cl} \xrightarrow{\text{CuCN}} \text{A} \xrightarrow{\text{H}_2\text{O}/\text{H}^+} \text{B}$ . Find compound A and B.

26. Calculate the standard emf of the cell.

$\text{Cd} / \text{Cd}^{2+} // \text{Cu}^{2+} / \text{Cu}$ . The standard reduction potentials of  $\text{Cu}^{2+} / \text{Cu}$  and  $\text{Cd}^{2+} / \text{Cd}$  are 0.34 V and -0.40 V respectively.

## PART - D

Answer the All questions:

3x5=15

27. a) Write the postulates of Werner's theory with an example?

(OR)

- b) Write down the main assumptions of valence bond theory.

28. a) Derive an expression for Nernst equation.

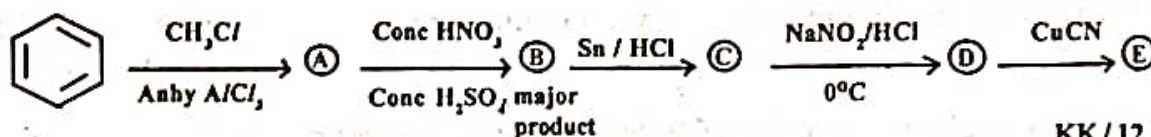
(OR)

- b) Describe the construction of Daniel cell. Write the cell reaction.

29. a) How will you distinguish between primary, secondary and tertiary amines.

(OR)

- b) Identify "A" to "E" in the following sequence of reactions.



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