V12C

Virudhunagar District

Second Mid Term Test - 2023

Standard 12

CHEMISTRY

Time: 1.30 Hours Marks: 50

Part - I

I. Choose the correct answer **10×1=10**

1) A complex in which the oxidation number of the metal is zero is
   a) $K_4[Fe(CN)_6]$ b) $[Fe(CN)_3(NH_3)_3]$
   c) $[Fe(CO)_5]$ d) both (b) and (c)

2) Which of the following is paramagnetic in nature
   a) $[Zn(NH_3)_4]^{2+}$ b) $[CO(NH_3)_6]^{3+}$ c) $[Ni(H_2O)_6]^{2+}$ d) $[Ni(CN)_4]^{2-}$

3) A magnetic moment of 4.89 BM will be shown by one among the following
   a) $TiCl_4$ b) $[COF_6]^{3-}$ c) $[Ni(CN)_4]^{2-}$ d) $[Cu(NH_3)_4]^{2+}$

4) While charging lead storage battery
   a) $PbSO_4$ on cathode is reduced to Pb
   b) $PbSO_4$ on anode is oxidised to PbO_2
   c) $PbSO_4$ on anode is reduced to Pb
   d) $PbSO_4$ on cathode is oxidised to Pb

5) Among the following cells
   I) Leclanche cell II) Nickel - cadmium cell
   III) Lead storage battery IV) Mercury cell primary cells are
   a) I and IV b) I and III c) III and IV d) II and III

6) Which of the following amines does not undergo acetylation?
   a) t-butylamine b) ethylamine c) diethylamine d) triethylamine

7) Which one of the following will not undergo Hofmann bromide reaction
   a) $CH_3CONHCH_3$ b) $CH_3CH_2CONH_2$ c) CH_3CONH_2 d) $C_6H_5CONH_2$

8) Secondary nitro alkanes react with nitrous acid to form
   a) red solution b) blue solution
   c) green solution d) yellow solution

9) The product formed by the reaction an aldehyde with a primary amine
   a) carboxylic acid b) aromatic acid c) Schiff's base d) ketone

10) How many faradays of electricity are required for the following reaction to occur $MnO_4^- \rightarrow Mn^{2+}$
   a) 5 F b) 3 F c) 1 F d) 7 F

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Part - II

II. Answer any five questions: [Q.No: 15 is compulsory] 5×2=10

11) What is crystal field stabilization energy (CFSE)?

12) What are the limitations of VB theory? (any two)

13) Write short notes on carbylamine reaction?

14) Write notes on Schotten - Baumann reaction?

15) Identify A and B

$$C_6H_5N_2Cl + C_6H_6 \xrightarrow{NaOH} A + B$$

16) State Kohlarusch law.

17) Define Equivalent conductance.

18) What are the Factors affecting electrolytic conductance [Any two]

Part - III

III. Answer any five questions: [Q.No: 25 is compulsory] 5×3=15

19) What is linkage isomerism? Explain with an example.

20) State Faraday's Laws of electrolysis.

21) Write a note on Sacrificial protection.

22) Write notes on Gabriel Phthalimide Synthesis.

23) Classify the following ligands based on the number of donor atoms.

a) NH_3 b) en c) OX^{2-} d) Pyridine

24) Define anode and cathode

25) Write the IUPAC names for the following complexes

i) $[CO(en)_2Cl_2]Cl$ ii) $[Cr(NH_3)_3(H_2O)_3]Cl_3$

26) How is chloropicrin prepared?

Part - IV

IV. Answer all the questions: 3×5=15

27) a) Based on VB theory explain why $[Cr(NH_3)_6]^{3+}$ is paramagnetic while $[Ni(CN)_4]^{2-}$ is diamagnetic

(OR)

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

28) a) How will you distinguish between primary secondary and tertiary aliphatic amines.

(OR)

b) Write the postulates of werner's theory.

29) a) Derive an expression for Nernst equation.

(OR)

b) Write short notes on the following

i) Mustard oil reaction ii) Sandmeyer reaction.

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