**Answer any 4 questions each question carries 1 mark**

1.Which among the following is temperature dependent

(molarity,molality,molefraction,normality)

2.Hydrolysis of ester belongs to which order

(first,pseudofirst,second,zero)

3.Preparation of $KMnO_4$ is from _____ ore.

4.Coordination compound used in treatment of cancer is _____.

5.carbylamine reaction is used to detect_____. (primary amine,secondaryamine,tertiary amine)

**Answer any 8 from 6-15 each question carries 2 marks.**

6.what is reverse osmosis?Give any one application.

7.Define vantHoff's factor(i).write its significance.

8.How do conductivity and molar conductivity vary with concentration of electrolytic solution?

9.Distinguish between order and molecularity.

10.$Ti^{2+}$ is coloured where as $Ti^{4+}$colourless. Give reason.

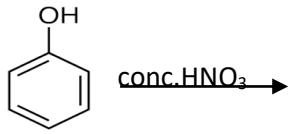
11.Give the IUPAC names of the following coordination compounds.

a) $[Co(NH_3)_6]Cl_3$ b)$K_3[Fe(CN)_6]$

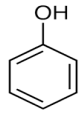
12.Convert benzene to benzaldehyde.

13.Aldehyde are more reactive than ketones.Why?

14.Complete the following reaction

a) 

conc.$HNO_3$ ⟶

b) 

dil.$HNO_3$ ⟶

15.what is denaturation of protien?

**Answer any 8 from 16-26 each question carries 3 marks.**

16.Fill in the blanks

a) _____ protein -Co-NH

b)Glycosylic linkage _____ -C-O-C

c)phosphodiester bond nucleic acid _____

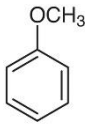
17.Identify the reaction

2HCHO conc.NaOH ⟶ __A_____?

$2CH_3CHO$ dil. NaOH ___B_____?

18.What is Lucas reagent?How is it used to detect $1^o$,$2^o$,$3^o$ alcohols?

19.Explain Williamson's synthesis.




+ HI $\xrightarrow{\quad A \quad}$ _____ + _____ ?

20.Nucleophilic Substitution is slow in aryl halide. why?

21.a) $[Co(NH_3)_4Cl_2]$ draw its geometrical isomers.

b) which form is optically active.

22.what is lanthanoid contraction.Give two consequence of lanthanoid contraction.

23.Derive the integrated rate equation for zero order reaction.

24.The rate constant for a reaction a 500K and 700K are 0.02 $S^{-1}$ and 0.07$S^{-1}$ respectively. Calculate the value of ka.

25.a) which law Is used to calculate the limiting molar conductivity for a weak electrolyte like $NH_4OH$.

b)$\lambda m^0$for NaCl,HCl and CH3COONa are 126.4,425.9 and 91.0S cm2mol−1 respectively. Calculate $\lambda m^0$of CH3COOH.

26.The boiling point of benzene is 353.23K. When 1.80g of a non-volatile non-ionisation solute was dissolved in 90g of benzene, the boiling point raised to 354.11K.Calculate the molar mass of the solute. [Kb for benzene =2.53K Kg $mol^{-1}$].

**Answer any 4 from 27-31 each question carries 4 marks.**

**27.** $Cu/Cu^{2+}//Ag^{+}/Ag$ write anode and cathode reaction. Calculate $E_{cell}$ ($Cu^{2+}$=0.13M), ($Ag^{+}$=.01M).The standard reduction potential of copper and silver electrodes are 0.34 and 0.80 Volts respectively.

28.a) Draw the crystal field splitting of octahedral complex.

b) $[NiCl_4]^{2-}$ is paramagnetic while $[Ni(Co)_4]$ is diamagnetic though both are tetrahedral. Why?

29.Complete the following. Write down the structure of A,B,C and D

i) $CH_3$-$CH_2$-CHO $\xrightarrow{KMnO_4}$ A

ii)$CH_3$-$CH_2$-CO-$CH_3$ $\xrightarrow{Zn\text{ -Hg/HCl}}$ B

iii)$CH_3$-$CH_2$-$CH_2$-COOH $\xrightarrow{Br/Red\ P/420K}$ C

iv)  $\xrightarrow{Pd/BaSO_4}$ D

30.a)write any two differences between SN1 and SN2 reactions.

b)During the beta-elimination reaction of 2-bromopentane in an alcoholic solution of KOH results pent 2-ene as the major product and pent 1-ene as the minor product.State the rule to explain the reaction.

31.a) Give the test to distinguish between 1°,2° and 3° amines

b)Amines are basic. Arrange the following amines in the increasing order of basis strength

$CH_3NH_2$, $(CH_3)_2NH$, $(CH_3)_3N$, $C_6H_5NH_2$

c) suggest the main product of each reaction

i) $CH_3NH_2$ $CHCl_3$+alc.KOH $\xrightarrow{\quad}$ _____

ii) $CH_3CONH_2$ $Br_2$+NaOH $\xrightarrow{\quad}$ _____

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