

# 12TH Chemistry

## 2 Marks Test

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- Q1.** State Henry's law and mention some important applications? **2 Marks**
- Q2.** Draw all the isomers (geometrical and optical) of:  
 $[\text{Co}(\text{NH}_3)\text{Cl}(\text{en})_2]^{2+}$  **2 Marks**
- Q3.** How is the variability in oxidation states of transition metals different from that of the non transition metals? Illustrate with examples. **2 Marks**
- Q4.** Give the oxidation state, d orbital occupation and coordination number of the central metal ion in the following complex:  
 $(\text{NH}_4)_2[\text{CoF}_4]$  **2 Marks**
- Q5.** Why do gases always tend to be less soluble in liquids as the temperature is raised? **2 Marks**
- Q6.** At 300 K, 36 g of glucose present in a litre of its solution has an osmotic pressure of 4.98 bar. If the osmotic pressure of the solution is 1.52 bars at the same temperature, what would be its concentration? **2 Marks**
- Q7.** From the rate expression for the following reactions, determine their order of reaction and the dimensions of the rate constant.  
 $\text{CH}_3\text{CHO}(\text{g}) \rightarrow \text{CH}_4(\text{g}) + \text{CO}(\text{g})$  Rate =  $k [\text{CH}_3\text{CHO}]^{3/2}$  **2 Marks**
- Q8.** The resistance of a conductivity cell containing 0.001M KCl solution at 298 K is 1500  $\Omega$ . What is the cell constant if conductivity of 0.001M KCl solution at 298 K is  $0.146 \times 10^{-3} \text{ S cm}^{-1}$ . **2 Marks**
- Q9.** Discuss the nature of bonding in the following coordination entitie on the basis of valence bond theory:  
 $[\text{Fe}(\text{CN})_6]^{4-}$  **2 Marks**
- Q10.** The decomposition of  $\text{NH}_3$  on platinum surface is zero order reaction. What are the rates of production of  $\text{N}_2$  and  $\text{H}_2$  if  $k = 2.5 \times 10^{-4} \text{ mol}^{-1} \text{ L s}^{-1}$ ? **2 Marks**
- Q11.** How would you account for the irregular variation of ionisation enthalpies (first and second) in the first series of the transition elements? **2 Marks**
- Q12.** A reaction is second order with respect to a reactant. How is the rate of reaction affected if the concentration of the reactant is,  
1. Doubled  
2. Reduced to half? **2 Marks**
- Q13.** How would you account for the following:  
The  $d^1$  configuration is very unstable in ions. **2 Marks**
- Q14.** Indicate the types of isomerism exhibited by the following complexe and draw the structure for these isomer:  
 $[\text{Pt}(\text{NH}_3)(\text{H}_2\text{O})\text{Cl}_2]$  **2 Marks**

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- Q15.** In what way is the electronic configuration of the transition elements different from that of the non transition elements? **2 Marks**
- Q16.** Henry's law constant for the molality of methane in benzene at 298 K is  $4.27 \times 10^5$  mm Hg. Calculate the solubility of methane in benzene at 298 K under 760 mm Hg. **2 Marks**
- Q17.** Vapour pressure of pure water at 298 K is 23.8 mm Hg. 50 g of urea ( $\text{NH}_2\text{CONH}_2$ ) is dissolved in 850 g of water. Calculate the vapour pressure of water for this solution and its relative lowering. **2 Marks**
- Q18.** Using the standard electrode potentials given in Table 3.1, predict if the reaction between the following is feasible:  
 $\text{Ag(s)}$  and  $\text{Fe}^{3+}(\text{aq})$  **2 Marks**
- Q19.** From the rate expression for the following reactions, determine their order of reaction and the dimensions of the rate constant.  
 $3\text{NO(g)} \rightarrow \text{N}_2\text{O(g)}$  Rate =  $k[\text{NO}]^2$  **2 Marks**
- Q20.** The vapour pressure of water is 12.3 kPa at 300 K. Calculate vapour pressure of 1 molal solution of a non-volatile solute in it. **2 Marks**

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