



Two - .....

Chemistry (SRM Institute of Science and Technology)



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First Semester  
21CYB101J - CHEMISTRY  
(For the candidates admitted during the academic year 2024-2025)

Note:

- (i) Part - A should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.  
(ii) Part - B & Part - C should be answered in answer booklet.

Time: 3 hours

Max. Marks: 75

**PART - A (20 x 1 = 20 Marks)**  
Answer ALL Questions

Marks BL CO PO

1. For a high spin  $d^4$  octahedral complex the crystal field splitting energy will be  
 A)  $-0.6 \Delta_o$  B)  $-0.8 \Delta_o$   
 C)  $0.6 \Delta_o$  D)  $0.8 \Delta_o$
  2. Which of the following is paramagnetic? [Z for Co= 27, Fe=26, Ni= 28]  
 A)  $[\text{Pt}(\text{NH}_3)_3\text{Cl}]^+$  B)  $[\text{Ni}(\text{CN})_4]^{2-}$   
 C)  $[\text{CoBr}_4]^{2-}$  D)  $[\text{Co}(\text{NH}_3)_6]^{3+}$
  3. The crystal field splitting energy for octahedral and tetrahedral complexes is related as  
 A)  $\Delta_t \approx 1/2 \Delta_o$  B)  $\Delta_o \approx 2 \Delta_t$   
 C)  $\Delta_o \approx 4/9 \Delta_t$  D)  $\Delta_t \approx 4/9 \Delta_o$
  4. Suggest the hard acid from the following ions given:  
 A)  $\text{Cu}^+$  B)  $\text{Mg}^{2+}$   
 C)  $\text{Cd}^{2+}$  D)  $\text{Hg}^{2+}$
  5. According to the convention, the Daniel cell is represented as \_\_\_\_\_  
 A)  $\text{Zn} \mid \text{ZnSO}_4 \parallel \text{Cu} \mid \text{CuSO}_4$ , E = 1.09 volt  
 B)  $\text{ZnSO}_4 \mid \text{Zn} \parallel \text{CuSO}_4 \mid \text{Cu}$ , E = 1.09 volt  
 C)  $\text{Zn} \mid \text{ZnSO}_4 \parallel \text{CuSO}_4 \mid \text{Cu}$ , E = 1.09 volt  
 D)  $\text{Zn} \mid \text{ZnSO}_4 \parallel \text{CuSO}_4 \mid \text{Cu}$ , E = 1.09 volt
- The following are state functions EXCEPT
- A) enthalpy (H) B) heat (q)  
 C) internal energy (U) D) entropy (S)
- When zinc metal, is attached to the ship's hull made of iron, zinc corrode itself instead of the hull. The type of corrosion is an example of ----
- A) Galvanic corrosion B) oxidation corrosion  
 C) liquid metal corrosion D) pitting corrosion
- If the solubility product of magnesium hydroxide is  $2.00 \times 10^{-11} \text{ mol}^3 \text{ dm}^{-9}$  at 298 K, calculate its solubility in  $\text{mol dm}^{-3}$  at that temperature.
- A)  $1.71 \times 10^{-4} \text{ mol dm}^{-3}$  B)  $1.71 \times 10^{-4} \text{ mol dm}^{-3}$   
 C)  $2.71 \times 10^{-4} \text{ mol dm}^{-3}$  D)  $3.42 \times 10^{-5} \text{ mol dm}^{-3}$