CLASS 12TH

SHORT TEST - 01

GENERAL INSTRUCTION

Maximum Marks = 40 Marks

Maximum Time = 90 minutes

Syllabus Covered : Solid State, Solutions, ElectroChemistry, d and f Block and Coordination Compounds

Q.(1) to (3) ,1 marks each – 3 × 1 = 3M

Q.(4) to (7), 2 marks each – 4 × 2 = 8M

Q.(8) to (10), 3 marks each – 3 × 3 = 9M

Q. (11) to (14), 5 marks each – 4 × 5 = 20M

Section – A

1. Write the characteristics of Solid State.
2. 18g Glucose (molar mass – 180g) is dissolved in 500g of water, find out the molarity of the solution.
3. Consider the following reaction: $Cu(s) + 2Ag^{+}(aq) \rightarrow 2Ag(s) + Cu^{2+}(aq)$ Depict the galvanic cell in which the given reaction takes place.

Section – B

4. Calculate the emf of the following cell at 298 K $Cr(s)|Cr^{3+}$ (0.1M)$||Fe^{2+}$ (0.01M)$|Fe(s)$ [Given: E°cell = + 0.30 V]
5. 0.63g oxalic acid (equivalent weight = 63) is dissolved in 250ml of solution. Find out the normality of solution.
6. Write difference between crystalline and amorphous solids.
7. Using IUPAC norms, write the formulae for the following complexes:
   (a) Potassium tri(oxalato)chromate(III)
   (b) Hexaaquamanganese(II) sulphate

Section – C

8. Write the IUPAC name of the following:
   (i) $[Co(NH_3)_6]Cl_3$
   (ii) $[NiCl_4]^{2-}$
   (iii) $K_4[Fe(CN)_6]$

9. For the complex ion $[CoF_6]^{3-}$ write the hybridisation type, magnetic character and spin nature. [Atomic number: Co = 27]

10. The magnetic moment of few transition metal ions are given below:

Metal ion	Magnetic moment (BM)
Sc^{3+}	0.00
Cr^{2+}	4.90
Ni^{2+}	2.84
Ti^{3+}	1.73

(Atomic no. Sc = 21, Ti = 22, Cr = 24, Ni = 28)

Which of the given metal ions:

(i) has the maximum number of unpaired electrons?

(ii) gives colourless aqueous solution?

(iii) exhibits the most stable +3 oxidation state?

Section – D

11. (a) Calculate E°cell for the following reaction at 298K:

$2Al(s) + 3Cu^{2+}(0.01M) \rightarrow 2Al^{3+}(0.01M) + 3Cu(s)$

Given: E°cell = 1.98 V

(b) Write Nernst equation for the reaction at 25°C

$$2Al(S) + 3Cu^{2} + (aq) \longrightarrow 2Al^{3+}(aq) + 3Cu(s)$$

(c) What are secondary batteries? Give an example.

12. (a) What are Lanthanides? Why is it difficult to separate them? Explain.

(b) With the help of electronic configuration of Fe^{+2} and Fe^{+3} explain which one is more paramagnetic.

13. What is Electrochemical Series? Explain Kohlrausch law with its two application.

14. What is Face centered cubic cell (F.C.C) ? Explain with diagram. Calculate the number of atoms in unit cell.

----------ALL THE BEST----------