



## CLASS 12<sup>TH</sup>

### 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 –  $3 \times 1 = 3\text{M}$

Q.(4) to (7), 2 marks each –  $4 \times 2 = 8\text{M}$

Q.(8) to (10), 3 marks each –  $3 \times 3 = 9\text{M}$

Q. (11) to (14), 5 marks each –  $4 \times 5 = 20\text{M}$

#### 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:  $\text{Cu(s)} + 2\text{Ag}^+(\text{aq}) \rightarrow 2\text{Ag(s)} + \text{Cu}^{2+}(\text{aq})$  Depict the galvanic cell in which the given reaction takes place.

#### Section – B

4. Calculate the emf of the following cell at 298 K  $\text{Cr(s)} | \text{Cr}^{3+} (0.1\text{M}) || \text{Fe}^{2+} (0.01\text{M}) | \text{Fe(s)}$   
[Given:  $E^\circ_{\text{cell}} = + 0.30 \text{ V}$ ]
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)  $[\text{Co}(\text{NH}_3)_6] \text{Cl}_3$
  - (ii)  $[\text{NiCl}_4]^{2-}$
  - (iii)  $\text{K}_4[\text{Fe}(\text{CN})_6]$



9. For the complex ion  $[\text{CoF}_6]^{3-}$  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)
$\text{Sc}^{3+}$	0.00
$\text{Cr}^{2+}$	4.90
$\text{Ni}^{2+}$	2.84
$\text{Ti}^{3+}$	1.73

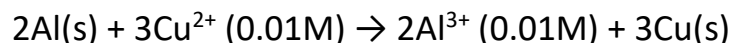
(Atomic no. Sc = 21, Ti = 22, Cr = 24, Ni = 28)

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?

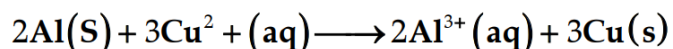
#### Section – D

11. (a) Calculate  $E^\circ_{\text{cell}}$  for the following reaction at 298K:



Given:  $E^\circ_{\text{cell}} = 1.98 \text{ V}$

(b) Write Nernst equation for the reaction at  $25^\circ\text{C}$



(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  $\text{Fe}^{+2}$  and  $\text{Fe}^{+3}$  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-----