CLASS—XII (H.P.)
CHEMISTRY

**Time Allowed : 3 Hours**   **Maximum Marks : 60**

Special Instructions : Same as in Model Test Paper—1.

1. When dispersion medium is water, the colloidal system is called :
   - (a) Sol
   - (b) Aquasol
   - (c) Aerosol
   - (d) Organosol.

2. The given reaction :

   $$2FeCl_3 + SnCl_2 \longrightarrow 2FeCl_2 + SnCl_4$$

   is an example of :
   - (a) First order reaction
   - (b) Second order reaction
   - (c) Third order reaction
   - (d) None of these.

3. Which of the following metals can deposit copper from copper sulphate solution :
   - (a) Mercury
   - (b) Iron
   - (c) Gold
   - (d) Platinum.

4. The protein responsible for blood clotting is :
   - (a) Albumins
   - (b) Globulins
   - (c) Fibrin
   - (d) Fibrinogen.

5. Which one of the following ligands form a chelate ?
   - (a) Acetate
   - (b) Oxalate
   - (c) Cyanide
   - (d) Ammonia.

6. The highest magnetic moment is shown by the transition metal ion with the outer electronic configuration :
   - (a) $3d^2$
   - (b) $3d^3$
   - (c) $3d^7$
   - (d) $3d^9$.

7. What is doping ?

8. Define velocity coefficient.

9. Give one example of zero order reaction.

10. What is electrometallurgy ?

11. Why the properties of third transition series are very similar to second transition series ?

12. What is the colligative property ? Show that the depression in freezing point is a colligative property.

13. Describe antibiotics with suitable examples.

14. Write three differences between catalytic behaviour of enzymes and catalytic behaviour of ordinary catalysts.

15. Give the composition and uses of German silver and alnico.

16. Give the significance of Ellingham diagrams.

17. What is the role of stabiliser and depressent in froth floatation process ?

18. Calculate equilibrium constant for the reaction at 298 K :

$$NiO_2 + 2Cl^- + 4H^+ \longrightarrow Cl_2 + Ni^{2+} + 2H_2O.$$
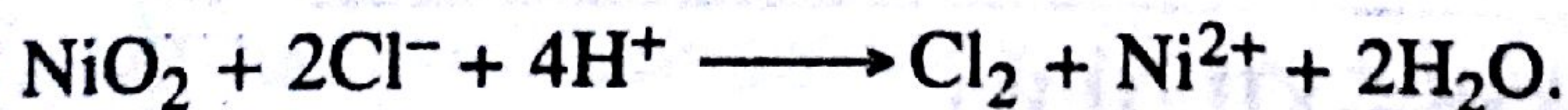
if $E^°_{cell} = 0.320$ V.

Or

(a) Distinguish between emf and potential difference.

(b) What is SHE ?

19. (a) Why boron and aluminium tend to form covalent compounds ?

(b) Of the d^4 species Cr (II) is strongly reducing, but Mn (III) is strongly oxidizing. Explain.

20. (a) Write IUPAC name of $K_3[Al(C_2O_4)_3]$.

(b) $[Ti(H_2O)_6]^{3+}$ is coloured while $[Sc(H_2O)_6]^{3+}$ is colourless. Explain.

21. (a) Define electrophoresis.

(b) Explain briefly the effect of temperature on the adsorption of gases on solids.

22. What mass of non-volatile solute glucose need to be dissolved in 100 g water in order to decrease the vapour pressure of water by 40% ?

23. The rate constant of a first order reaction becomes six times, when the temperature is raised from 350 K to 400 K. Calculate the energy of activation for the reaction.

24. Solution containing 5% of a substance 'A' is isotonic with a solution containing 10 g of urea per litre. Calculate the molar mass of substance A.

25. The following data were obtained for the reaction :

$$2A + B \longrightarrow C + D$$

Experiment No.	Initial Conc. (mol L^{-1})		Initial Rate
	[A]	[B]	mol L^{-1} min^{-1}
I	0.1	0.1	5.0×10^{-3}
II	0.3	0.2	6.0×10^{-2}
III	0.3	0.4	2.4×10^{-1}
IV	0.4	0.1	2.0×10^{-2}

Determine the order of reaction and write the rate law equation for the reacton.

26. (a) How amines are prepared from primary amides ?

(b) Account for : Direct nitration is not good method for the laboratory preparation of nitroalkanes.

(c) Aniline is less basic than NH_3, why ?

27. (a) Give two tests to distinguish acetaldehyde and acetone.

(b) Give the mechanism of nitration of benzene.

(c) What is urotropine ? How is it prepared ?

28. Write the chemical equations, when :

(a) Bromoethane reacts with Magnesium.

(b) 1-propanol reacts with Ethanoic acid.

(c) 2-methoxy-2-phenyl propane reacts with HI at 375 K.

(d) Acetaldehyde reacts with $NaHSO_3$.