Practice questions – Chapter 5

1. Define different types of systems.
2. Define the terms : Internal energy and enthalpy of a system.
3. Define entropy and give mathematical expression for entropy.
4. What is galvanic cell? Give its representation.
5. Define single and standard electrode potentials.
6. Compare and contrast dry and wet corrosion.
7. Derive Nernst equation and give its implications.
8. Explain the significance of Gibbs-Helmoltz equation
9. Hydrochloric acid (HCl) reacts with sodium hydroxide (NaOH) to form sodium chloride (NaCl) and water. If $\Delta H^\circ = -56.13$ kJ/mol and $\Delta S^\circ = 79.11$ J/mol · K, what is ΔG° for this reaction at 20°C?
10. With a neat sketch explain Pourbaix diagram for Iron
11. A reaction with a low enthalpy of reaction value is not spontaneous at low temperature but becomes spontaneous at high temperature. What are the signs for ΔH° and ΔS°, respectively?
12. Define solubility product. Write the K_{sp} for $MgCO_3$
13. Dinitrogen tetroxide (N_2O_4) decomposes to nitrogen dioxide (NO_2). If $\Delta H^\circ = 58.02$ kJ/mol and $\Delta S^\circ = 176.1$ J/mol · K, at what temperature are reactants and products in their standard states at equilibrium?