1. What is meant superconductivity? Describe the effect of
   a. Magnetic field
   b. Frequency
   c. Isotopes and
   d. Temperature on superconductors.

2. Explain the term critical magnetic field in superconductor. How does the critical magnetic field vary with temperature in type I and type II superconductor? What is Meissner effect.
3. Applying Maxwell's equations and Meissner effect find an expression for the penetration depth of magnetic field in superconductor.
4. The variation of critical magnetic field of a superconductor with temperature is given by $B_{CT} = B_{C0}(1 - \frac{T^2}{T_C^2})$ where symbols have their usual meanings. With the help of thermodynamics show that the superconducting electrons are more ordered than normal electrons.
5. Briefly outline BCS theory of superconductivity.