CL25_Q1. Discuss the variation of Fermi factor on temperature and consequent effect on probability of occupation of energy levels.

CL25_Q2. Use the Fermi distribution function to obtain the value of F_d for $E\text{-}E_F$ = 0.01 eV at 200 K.

CL25_Q3. Show that the probability of occupancy of an energy level ΔE below the Fermi level is the same as that of the probability of non-occupancy of an energy level ΔE above the Fermi level.

CL25_Q4. At what temperature would the probability of occupancy of an energy state 0.01eV below the Fermi level be 0.95?

CL25_Q5. Estimate the temperature at which there is 2% probability that a state with energy 0.4 eV above the Fermi energy level is occupied.

CL25_Q6. Show that the density of states for conduction electron per unit volume of the metal is $g(E)dE = \frac{\pi}{2}\left(\frac{8m}{h^2}\right)^{\frac{3}{2}} E^{\frac{1}{2}}\, dE$

CL25_Q7. Calculate the number of states lying in an energy interval of $0.01\ eV$ above the Fermi-level for a crystal of unit volume with energy $E_F = 3.0\ eV$