1. **Problem 2.6** (problem 1 from HW#2)

2. **Problem 3.31** (problem 3 from HW#2)

3. **Monte Carlo code** (problem 5 from HW#2)

4. **Surface Emissivity.** The refractive index of silicon at 0.63 µm is (3.882, 0.019), calculate the surface reflectivity, transmissivity, and emissivity of a semi-infinite silicon wafer (a) at normal incidence, (b) at 30° angle of incidence, and (c) 60° angle of incidence for both TE and TM waves. Also, estimate the penetration depth for normal incidence.

5. **Fresnel Formula for TE Wave.** Derive the Fresnel formula for a transverse electric wave incident onto a plane surface,

6. **Tunneling of Photons.** A vacuum gap of 0.2 µm is formed between two glass substrates. Plot the transmissivity of light from one glass substrate into another as a function of angle of incidence for an incident TM wave at 0.5 µm. The refractive index of the glass is taken as 1.46. Compare the results with the situation if a thin film of glass of 0.2 µm is sandwiched between vacuum.