1. A photon has the same momentum as an electron with 3MeV energy, what is the energy of the photon?

2. Light with 3000A wavelength perpendicularly radiates through a surface area of 4 cm^2. The intensity of light is 0.15W/m^2. How many photons hit the surface per second?

3. In a photoelectric experiment, it is found that a maximum wavelength of 6000A is needed to generate any photocurrent from the target metal. Then in order to get a photocurrent with stop voltage of 2.5V, what wavelength is required?

4. Prove that it is impossible for a free electron to completely absorb the energy of a photon.

5. In Compton scattering, an x-ray photon with energy of 0.5MeV scatters with a rest electron. The scattered electron has a kinetic energy of 0.1MeV. What is the wavelength of the scattered x-ray and what is its angle?

6. In Compton scattering, if the scattered x-ray photon can generate an electron-positron pair, what is the maximum angle of the scattered x-ray photon?