

Physics 241  
Problem Set 6  
(Due 7/6/1432 H)

Name:

Number:

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1. When ultraviolet light with a wavelength of 254 nm falls on a clean copper surface, the stopping potential necessary to stop emission of photoelectrons is 0.181 V. (a) What is the photoelectric threshold wavelength for this copper surface? (b) What is the work function for this surface?
  
  
  
  
  
  
  
  
  
  
2. A photon of green light has a wavelength of 520 nm. Find the photon's frequency, magnitude of momentum, and energy. Express the energy in both joules and electron volts?
  
  
  
  
  
  
  
  
  
  
3. If a photon of wavelength 0.04250 nm strikes a free electron and is scattered at an angle of  $35^\circ$  from its original direction. Find (a) the change in the wavelength of this photon; (b) the wavelength of the scattered light; (c) the change in energy of the photon (is it a loss or a gain); (d) the energy gained by the electron.