Student ID:_____ Name: _____

IMPORTANT INFORMATION that you may need:

Speed of light in empty space (c) 3.0×10^8 m/s

Planck's constant (h) 6.63×10^{-34} J sec = 4.14×10^{-15} eV sec

Coulomb's constant (k) 8.99×10^9 N m^2/C^2

Charge of an electron (e) -1.6×10^{-19} C

Mass of an electron (m$_e$) 9.11×10^{-31} kg

Mass of a proton (m$_p$) 1.67×10^{-27} kg

1 electron Volt (eV) = 1.602×10^{-19} J   1 MeV = 1×10^6 eV

1 pm = 1×10^{-12} 1 nm = 1×10^{-9} m   1 μm = 1×10^{-6} m   1 mm = 1×10^{-3} m

Double Slit Interference pattern:

  Maxima: $d \sin\theta = m\,\lambda$ Minima: $d \sin\theta = (m+1/2)\,\lambda$ with m = 0, ±1, ±2, ±3, …

where d is the spacing between the slits and λ is the wavelength of the light.

Representative wavelength ranges:

Infrared (750 nm – 1000 nm)   Red (620 - 750 nm)   Orange (590 - 620 nm)

Yellow (570 - 590 nm)   Green (495 - 570 nm)   Blue (450 – 495 nm)

Violet (380 - 450 nm)   Ultraviolet (380 nm – 10 nm)

Work functions of common metals:

Sodium: 2.28eV   Calcium: 2.9eV   Cadmium: 4.07eV   Aluminum: 4.08eV

Lead: 4.14eV   Silver: 4.73eV   Carbon: 4.81eV   Nickel: 5.01eV