

CONCEPT ORGANIZER 3A - CHAP. 3 (optical phenomena, sections 3-1 to 3-2)

Concept	Reading	Short Answer or Equation
Basic optical relationships and laws	T30-35	
Q. Does wavelength or does frequency change with refractive index?		
Q. State Beer's law in terms of a) molar absorptivity, b) absorption cross section?	T34-35, S4	
Q. What is the difference between absorbance and absorptivity?		
Q. What is the most critical assumption in Beer's law?		
Q. State Snell's law	T32	
Q. Is the angle of refraction smaller or larger than the angle of incidence when going from a less dense to a higher refractive index media?		
Q. State the Fresnel equation for perpendicular incidence	T33	
Q. Does the degree of reflection increase or decrease as the difference between the refractive indexes of the two media increase?		

Q. State the equation for calculation of the critical angle for internal reflection	T33	
Q. Does internal reflection occur when the angle of incidence is greater or less than the critical angle?		
Polarization	T35-36, T39	
Q Name the optical phenomenon responsible for polarization with a prism.		
Q. Polarization with a Polaroid sheet is based on what optical phenomenon		
Q. Which polarization component is not reflected if the angle of incidence is equal to Brewster's angle?		
Interference and single- and multiple-slit diffraction	T37-T39, also see course links on diffraction	
Q. State the equation indicating the position of the minima in the diffraction pattern for single slit diffraction		
Q. As the slit width increases, does the distance between the fringes increase or decrease?		
Q. State the equation indicating the position of the maxima for multiple slit diffraction		

Q. When the number of slits increase, does the diffraction maxima become narrower or broader?		
Q. Constructive interference occurs when the difference in optical pathlength of two waves is equal to?		
Dispersion	T31, T63, Fig 3-37 & 3-38	
In general, does dispersion increase as the wavelength becomes shorter or longer?		