

Max Sha

$$1. 660 \text{ nm} \times \frac{1 \text{ cm}}{1 \times 10^7 \text{ nm}} = 6.6 \times 10^{-5} \text{ cm} \quad \frac{1}{6.6 \times 10^{-5}} = 15200 \text{ cm}^{-1}$$

2. Structure 1 has a greater conjugation of chromophores as the double bond is close enough to form ~~the~~ a conjugated system larger than structure 2. As ~~a~~ a more conjugated system increases the wavelength of the maximum absorption I must be  $\beta$ -ionone and II must be ~~alpha-ionone~~  $\alpha$ -ionone.

$$3. A = \epsilon bc \quad (a) \quad A = (1.00)(1.05 \times 10^3)(2.33 \times 10^{-4})$$
 ~~$A = 2.45 \times 10^{-1}$~~

$$A = 2.45 \times 10^{-1} = 0.245$$

$$(b) \quad T = 10^{-A} = 10^{-0.245} = 0.569$$

$$(c) \quad A = (2.00)(1.05 \times 10^3)(2.33 \times 10^{-4})$$

$$= 2.45 \times 10^{-1} \times 2 = 4.89 \times 10^{-1} = 0.489$$

$$T = 10^{-0.489} = 0.324$$

$$(d) \quad A = 2.45 \times 10^{-1} \times 2 = 4.89 \times 10^{-1} = 0.489$$

$$T = 10^{-0.489} = 0.324$$

$$4) (a) \quad A = \epsilon bc \quad 0.650 = (1.00)(8400) C \quad C = 7.74 \times 10^{-5} \text{ M}$$

(x10 / M x 5)   
 0 x 5 H<sub>2</sub>O

$$(b) \quad \frac{7.74 \times 10^{-5} \text{ mol}}{1 \text{ L}} \times \frac{283.241 \text{ g}}{1 \text{ mol granosine}} \times \frac{1 \text{ L}}{100 \text{ mL}} = 2.19 \times 10^{-5} \text{ g/mL}$$

283.241 g/mol

$$(c) \quad \frac{2.19 \times 10^{-5} \text{ g}}{1 \text{ mL}} \times \frac{1000 \text{ mg}}{1 \text{ g}} \times \frac{1000 \text{ mL}}{1 \text{ L}} = 21.9 \text{ ppm}$$

mg/L

(d) Because granosine absorbs at 275 nm, which is in the UV region, it is ~~colorless~~ in water.  
colorless