

Key

CH301H – Principles of Chemistry I: Honors
Fall 2017, Unique 50135

Quiz 2, 3 October 2017

Human cells strongly absorb light at 260 nm (DNA and RNA), 280 nm (proteins), and 900 nm (water).

a) Draw the absorption spectrum of a human cell from 100-1000 nm.

b) What color will this cell appear?

c) Human blood cells contain a protein, hemoglobin, which makes the cells appear red. Draw the absorption spectrum for hemoglobin.

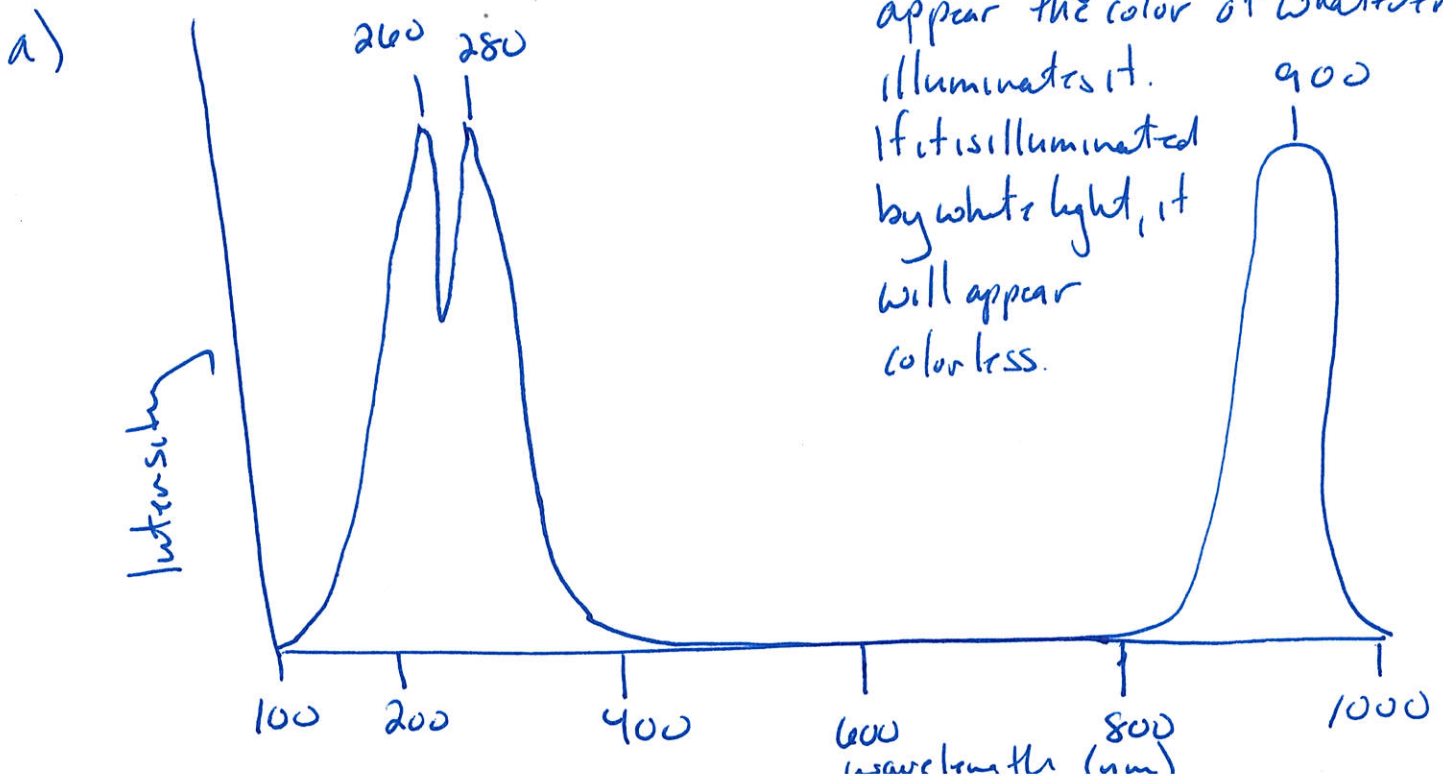
The following constants may be useful:

$$\epsilon_0 = 8.85 \times 10^{-12} \text{ C}^{-2} \text{ J}^{-1} \text{ m}^{-1}$$

$$N_A = 6.022 \times 10^{23} \text{ mol}^{-1}$$

$$e = 1.602 \times 10^{-19} \text{ C}$$

b) This cell does not absorb visible light. It therefore will appear the color of whatever illuminates it. If it is illuminated by white light, it will appear colorless.



c) If the cell appears red, it is absorbing blue/green light:

