Wave Calculations Problems
Chemistry
2 points

YOU MUST SHOW WORK! (Separate paper may be attached.)

1) What does c stand for? What are its units?

2) What does λ stand for? What are its units?

3) What does ν stand for? What are its units?

4) What does nm stand for?

5) What does Hz stand for? What is it equal to?

6) What do AM and FM indicate about a measurement? What are they equal to?

7) (a) What is the frequency of light of 405 nm wavelength? [7.41×10^{14} Hz or 1/s]
(b) What color is the light? (see visible spectrum)

8) (a) What is the wavelength of waves with a frequency of 1.0×10^{11} Hz?
[3.0×10^{-3} m or 0.0030 m]
(b) What type of EMR waves are they (see visible spectrum)?

9) (a) What is the frequency of light with a 462 nm wavelength? [6.49×10^{14} Hz]
(b) What color is the light? (see visible spectrum)

10) Night vision goggles capture upper infrared rays of 6.0×10^{13} Hz. What wavelength is that?
[5.0×10^{-6} m]

11) UV-B rays can cause cataracts. Their wavelength is 280 nm. What is their frequency?

12) What is the wavelength of 760**.** AM (WJR's radio signal)? [395 m!]

13) What radio station frequency has a wavelength of 3.14 m?

14) (a) What is the frequency of a wave with a wavelength of 3.0×10^{-12} m?
(b) What type of EMR wave is it (see visible spectrum)?

15) What is the wavelength of a wifi signal of 2.4×10^{9} Hz?

16) (a) A mysterious light has a frequency of 4.92×10^{14} Hz. What is its wavelength?
(b) What color is the light? (Hint: You must convert the wavelength to nm first!)

17) What is the wavelength of a 4G cell phone's waves of 7.6×10^{9} Hz?

18) A remote control uses a wavelength of 940 nm. What is its frequency?

19) Which travels at a faster speed, the wave from question 17 or the wave from question 18? Explain your answer.