Practice Problems Section 6.1

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| 1)   | Electromagnetic radiation travels through a vacuum at a speed of\_\_\_\_\_\_\_\_\_\_m/s. |
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|  | a)  | 186,000 |
|  | b)  | 125 |
|  | c)  | 3.00 x 108 |
|  | d)  | 10,000 |
|  | e)  | it depends on the wavelength |

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| 2)   | the wavelength of light that has a frequency of 1.20 x 1013 s-1 is \_\_\_\_\_ m. |
|  | a)  | 25.0 |
|  | b)  | 2.50 x 10-5 |
|  | c)  | 0.0400 |
|  | d)  | 12.0 |
|  | e)  | 2.5 |

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| 3)   | What is the frequency (s-1) of electromagnetic radiation that has a wavelength of 0.53 m? |
|  | a)  | 5.7 x 108 |
|  | b)  | 1.8 x 10-9 |
|  | c)  | 1.6 x 108 |
|  | d)  | 1.3 x 10-33 |
|  | e)  | 1.3 x 1033 |

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| 4)   | The energy of a photon of light is \_\_\_\_\_\_ proportional to its frequency and \_\_\_\_\_\_\_\_ proportional to its wavelength. |
|  | a)  | directly, directly |
|  | b)  | inversely, inversely |
|  | c)  | inversely, directly |
|  | d)  | directly, inversely |
|  | e)  | indirectly, not |

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| 5)   | Of the following, \_\_\_\_\_ radiation has the shortest wavelength. |
|  | a)  | x-ray |
|  | b)  | Radio |
|  | c)  | microwave |
|  | d)  | ultraviolet |
|  | e)  | Infared |

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| 6)   | Ham radio operators often broadcast on the 6-meter band. The frequency of this electromagnetic radiation is \_\_\_\_\_MHz. |
|  | a)  | 500 |
|  | b)  | 200 |
|  | c)  | 50 |
|  | d)  | 20 |
|  | e)  | 2.0 |

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| 7)   | What is the frequency of light (s-1) that has a wavelength of 1.23x10-6 cm? |
|  | a)  | 3.69 |
|  | b)  | 2.44 x 1016 |
|  | c)  | 4.10 x 10-17 |
|  | d)  | 9.62 x 1012 |
|  | e)  | 1.04 x 10-13 |

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| 8)   | Of the following, \_\_\_\_\_\_\_ radiation has the longest wavelength and \_\_\_\_ radiation has the greatest energy.gammaultravioletvisible |
|  | a)  | ultraviolet, gamma |
|  | b)  | visible, ultraviolet |
|  | c)  | gamma, gamma |
|  | d)  | visible, gamma |
|  | e)  | gamma, visible |

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| 9)   | What color of visible light has the longest wavelength? |
|  | a)  | blue |
|  | b)  | violet |
|  | c)  | red |
|  | d)  | yellow |
|  | e)  | Green |

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| 10)   | What color of visible light has the highest energy? |
|  | a)  | violet |
|  | b)  | blue |
|  | c)  | red |
|  | d)  | green |
|  | e)  | yellow |