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. gamma ultraviolet visible | |
|  | 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 |