

4. (a) The frequency of the radiation is

$$f = \frac{c}{\lambda} = \frac{3.0 \times 10^8 \text{ m/s}}{(1.0 \times 10^5)(6.4 \times 10^6 \text{ m})} = 4.7 \times 10^{-3} \text{ Hz.}$$

(b) The period of the radiation is

$$T = \frac{1}{f} = \frac{1}{4.7 \times 10^{-3} \text{ Hz}} = 212 \text{ s} = 3 \text{ min } 32 \text{ s.}$$