Pg 124

10) $\nu = ?\ Hz$

$\lambda = 4.257 \times 10^{-7}\ cm$

$= 4.257 \times 10^{-9}\ m$

$c = 3.00 \times 10^{8}\ m/s$

$c = \lambda \nu$

$\nu = \frac{c}{\lambda}$

$\nu = \frac{3.00 \times 10^{8}\ m/s}{4.257 \times 10^{-9}\ m}$

$\boxed{\nu = 7.047 \times 10^{16}\ \frac{1}{s} \text{ OR } 7.047 \times 10^{16}\ Hz}$

11) $E = ?\ J$

$\nu = 3.55 \times 10^{17}\ Hz$

$h = 6.626 \times 10^{-34}\ J \cdot s$

$E = h\nu$

$E = (6.626 \times 10^{-34}\ J \cdot s)(3.55 \times 10^{17}\ \cancel{Hz}\ \frac{1}{s})$

$\boxed{E = 2.35 \times 10^{-16}\ J}$

14) $\lambda = 1.00 \times 10^{-3}\ nm$

$E = ?\ J$

$h = 6.626 \times 10^{-34}\ J \cdot s$

$c = 3.00 \times 10^{8}\ m/s$

$E = h\nu$ ← must find ν first

$E = (6.626 \times 10^{-34}\ J \cdot s)(3.00 \times 10^{20}\ \frac{1}{s})$

$\boxed{E = 1.99 \times 10^{-13}\ J}$

$c = \lambda \nu$

$\nu = \frac{c}{\lambda} = \frac{3.00 \times 10^{8}\ m/s}{1.00 \times 10^{-3}\ nm} = \frac{3.00 \times 10^{8}\ m/s}{1.00 \times 10^{-12}\ m} = 3.00 \times 10^{20}\ \frac{1}{s}$

35) a) Cl : $[Ne]\,3s^2\,3p^5$

b) Ca : $[Ar]\,4s^2$

c) Se : $[Ar]\,4s^2\,3d^{10}\,4p^4$

38) a) B

b) F

c) Mg

d) Si

e) Cl

f) K

g) Fe

47) $\nu = ?$ Hz

$E = 1.55 \times 10^{-24}$ J

$h = 6.626 \times 10^{-34}$ J.s

$E = h\nu$

$\nu = \frac{E}{h}$

$\nu = \frac{1.55 \times 10^{-24}\ J}{6.626 \times 10^{-34}\ J.s}$

$\boxed{\nu = 2.34 \times 10^{9}\ \frac{1}{s} \text{ or } 2.34 \times 10^{9}\ Hz}$