

$$1) \text{ Average Atomic Mass} = \text{Mass}_1 \times \%_1 + \text{Mass}_2 \times \%_2$$

$$69.72 \text{ amu} = 68.926 \text{ amu} \cdot X + 70.9247 \text{ amu} \cdot (1 - X)$$

$$69.72 \text{ amu} = 68.926 \text{ amu} \cdot X + 70.9247 \text{ amu} - 70.9247 \text{ amu} \cdot X$$

$$69.72 \text{ amu} = -1.9987 \text{ amu} \cdot X + 70.9247 \text{ amu}$$

$$-1.2047 \text{ amu} = -1.9987 \text{ amu} \cdot X$$

$$0.6027 = X \Rightarrow {}^{69}\text{Ga} = 60.27\%$$

$$1 - 0.6027 = 0.3973 \Rightarrow {}^{71}\text{Ga} = 39.73\%$$

$$2) \text{ Average Atomic Mass} = \text{Mass}_1 \times \%_1 + \text{Mass}_2 \times \%_2$$

$$107.870 \text{ amu} = 106.905 \text{ amu} \cdot X + 108.9048 \text{ amu} \cdot (1 - X)$$

$$107.870 \text{ amu} = 106.905 \text{ amu} \cdot X + 108.9048 \text{ amu} - 108.9048 \text{ amu} \cdot X$$

$$107.870 \text{ amu} = -1.9998 \text{ amu} \cdot X + 108.9048 \text{ amu}$$

$$-1.0348 \text{ amu} = -1.9998 \text{ amu} \cdot X$$

$$0.5175 = X \Rightarrow {}^{107}\text{Ag} = 51.75\%$$

$$1 - 0.5175 = 0.4825 \Rightarrow {}^{109}\text{Ag} = 48.25\%$$

$$3) \text{ Average Atomic Mass} = \text{Mass}_1 \times \%_1 + \text{Mass}_2 \times \%_2$$

$$6.939 \text{ amu} = 6.015 \text{ amu} \cdot X + 7.016 \text{ amu} \cdot (1 - X)$$

$$6.939 \text{ amu} = 6.015 \text{ amu} \cdot X + 7.016 \text{ amu} - 7.016 \text{ amu} \cdot X$$

$$6.939 \text{ amu} = -1.001 \text{ amu} \cdot X + 7.016 \text{ amu}$$

$$-0.077 \text{ amu} = -1.001 \text{ amu} \cdot X$$

$$0.077 = X \Rightarrow {}^{107}\text{Ag} = 7.7\%$$

$$1 - 0.077 = 0.923 \Rightarrow {}^{109}\text{Ag} = 92.3\%$$

$$4) \text{ Average Atomic Mass} = \text{Mass}_1 \times \%_1 + \text{Mass}_2 \times \%_2$$

$$85.47 \text{ amu} = 84.912 \text{ amu} \cdot 0.7217 + X \cdot (1 - 0.7217)$$

$$85.47 \text{ amu} = 84.912 \text{ amu} \times 0.7217 + X \cdot 0.2783$$

$$85.47 \text{ amu} = 61.281 \text{ amu} + 0.2783 \cdot X$$

$$24.189 \text{ amu} = 0.2783 X$$

$$86.92 \text{ amu} = X$$

$${}^{87}\text{Rb} = 86.92 \text{ amu}$$

$$5) \text{ Average Atomic Mass} = \text{Mass}_1 \times \%_1 + \text{Mass}_2 \times \%_2 + \text{Mass}_3 \times \%_3 + \text{Mass}_4 \times \%_4$$

$$\text{Average Atomic Mass} = 49.946 \text{ amu} \times 0.0435 + 51.941 \text{ amu} \times 0.8379 + 52.941 \text{ amu} \times 0.0950 + 53.939 \text{ amu} \times 0.0236$$

$$\text{Average Atomic Mass} = 2.17265 \text{ amu} + 43.52136 \text{ amu} + 5.02940 \text{ amu} + 1.27296 \text{ amu}$$

$$\text{Average Atomic Mass} = 51.996 \text{ amu}$$

6) Average Atomic Mass = $\text{Mass}_1 \times \%_1 + \text{Mass}_2 \times \%_2 + \text{Mass}_3 \times \%_3 + \text{Mass}_4 \times \%_4$

$$87.62 \text{amu} = 83.91 \text{amu} \times 0.0056 + 85.909 \text{amu} \times 0.0986 + 86.9909 \text{amu} \times 0.0700 + \text{X} \times 0.8258$$

$$87.62 \text{amu} = 0.469896 \text{amu} + 8.4706 \text{amu} + 6.089363 \text{amu} + 0.8258 \text{X}$$

$$87.62 \text{amu} = 15.029859 \text{amu} + 0.8258 \text{X}$$

$$72.590141 \text{amu} = 0.8258 \text{X}$$

$$87.90 \text{amu} = \text{X}$$

$$^{88}\text{Sr} = 87.90 \text{amu}$$

7) $100\% - 0.15\% - 10.10\% - 17.00\% - 23.10\% - 13.20\% - 6.80\% = \mathbf{29.65\%}$

8) Abundance of $^{29}_{14}\text{Si}$ = $100\% - 92.23\% - 3.10\% = 4.67\%$

$$28.086 = 27.9769 \times 0.9223 + \text{X} \times 0.0467 + 29.9738 \times 0.0310$$

$$28.086 = 25.8031 + 0.0467 \text{X} + 0.92919$$

$$1.353712 = 0.0467 \text{X}$$

$$28.99 = \text{X}$$

$$^{29}_{14}\text{Si} = 28.99 \text{amu}$$