

REVIEW QUESTIONS

## Chapters 9 &amp; 10

1. For each element below, use the information given to determine the number of protons, neutrons and electrons in its atom, and write shorthand notation for each.

a) Krypton (Kr) atomic number ( $Z=36$ ); mass number ( $A=84$ )

$$p^+ = \underline{\hspace{2cm}} \quad n^0 = \underline{\hspace{2cm}} \quad e^- = \underline{\hspace{2cm}} \quad \text{Notation: } \underline{\hspace{2cm}}$$

b) Barium (Ba) atomic number ( $Z=56$ ); mass number ( $A=137$ )

$$p^+ = \underline{\hspace{2cm}} \quad n^0 = \underline{\hspace{2cm}} \quad e^- = \underline{\hspace{2cm}} \quad \text{Notation: } \underline{\hspace{2cm}}$$

2. How are isotopes of an atom similar to each other? How are they different?

3. Complete each equation below, and classify the type of decay:



4. Half-life of a radionuclide is 5 days. How many days will it require for a 160-g sample of this radionuclide to decay to 5 grams?

5. For each pair of nuclides given, determine which is radioactive, and give a reason for your choice:

a)  ${}^{17}_9\text{F}$  and  ${}^{32}_{16}\text{S}$  Reason: \_\_\_\_\_

b)  ${}^{56}_{26}\text{Fe}$  and  ${}^{226}_{88}\text{Ra}$  Reason: \_\_\_\_\_

c)  ${}^{23}_{11}\text{Na}$  and  ${}^{20}_9\text{F}$  Reason: \_\_\_\_\_

6. Complete the missing information in the table below:

Symbol	${}^{70}_{31}\text{Ga}$	
Protons		15
Neutrons		
Electrons		
Mass number		31

7. Complete each statement below with a suitable word or phrase:

A) The subatomic particle discovered by J.J. Thomson is called \_\_\_\_\_.

B) The scientist associated with the “soccer ball” model of the atom is \_\_\_\_\_.

C) The nucleus of the atoms contains \_\_\_\_\_ and \_\_\_\_\_.

D) \_\_\_\_\_ decay reduces the energy of the original radionuclide.

E) The number of protons and neutrons in an atom is called its \_\_\_\_\_.

F) No stable nuclide exists with atomic number (Z) greater than \_\_\_\_\_.