

G11 Chemistry: Class 2 Homework**MULTIPLE CHOICE: Circle the correct answer.**

1. Alpha particles are identical to

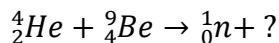
- A) protons.
- B) helium atoms.
- C) hydrogen atoms.
- D) helium nuclei.
- E) electrons.

2. Beta particles are identical to

- A) protons.
- B) helium atoms.
- C) hydrogen atoms.
- D) helium nuclei.
- E) electrons.

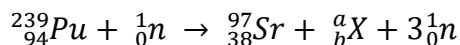
3. A radioisotope decays to give an alpha particle and Pb-208. What was the original element?

- A) Se
- B) Bi
- C) Po
- D) Hg
- E) Rn

4. When atoms of beryllium-9 are bombarded with alpha particles, neutrons are produced.
What new isotope is also formed?

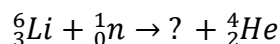
- A) ${}^{12}_6\text{C}$ B) ${}^5_3\text{Li}$ C) ${}^8_3\text{Li}$ D) ${}^{10}_5\text{B}$ E) ${}^{12}_5\text{B}$

5. What is the missing symbol in this plutonium fission reaction?



- A) ${}^{148}_{56}\text{Ba}$ B) ${}^0_{-1}\beta$ C) ${}^{140}_{54}\text{Xe}$ D) ${}^{91}_{38}\text{Sr}$ E) ${}^{140}_{56}\text{Ba}$

6. Predict the other product of the following nuclear transformation.



- A) ${}^6_2\text{He}$ B) ${}^2_1\text{H}$ C) ${}^3_1\text{H}$ D) ${}^0_{+1}\beta$ E) ${}^5_1\text{H}$

7. Sulfur-35 decays by beta emission. The decay product is

- A) ${}_{15}^{35}\text{P}$ B) ${}_{16}^{34}\text{S}$ C) ${}_{30}^{31}\text{Si}$ D) ${}_{17}^{34}\text{Cl}$ E) ${}_{17}^{35}\text{Cl}$

8. The only stable isotope of aluminum is aluminum-27. What type of radioactive decay should be expected from ${}_{13}^{28}\text{Al}$?

- A) ${}^1_1\text{H}$ B) ${}^1_0\text{n}$ C) ${}^0_{-1}\beta$ D) ${}^0_{+1}\beta$ E) ${}^4_2\text{He}$

9. A polar covalent bond would form in which one of the following pairs of atoms?

- A) Cl – Cl
B) Si – Si
C) Ca – Cl
D) C – Br
E) P – Cl

10. A *nonpolar* covalent bond (i.e., pure covalent) would form in which one of the following pairs of atoms?

- A) Na – Cl
B) H – Cl
C) Li – Br
D) Se – Br
E) Br – Br

11. The covalent bond with the *greatest* polarity would form in which of the atom pairs below?

- A) Br – Br
B) S – O
C) C – P
D) C – O
E) B – O

12. Classify the O – H bond in CH_3OH as ionic, polar covalent, or nonpolar covalent.

- A) ionic
B) polar covalent
C) nonpolar covalent

13. Classify the Ca – Cl bond in CaCl_2 as ionic, polar covalent, or nonpolar covalent.

- A) ionic
B) polar covalent
C) nonpolar covalent

SHORT ANSWER: Answer the following questions.

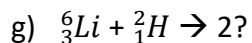
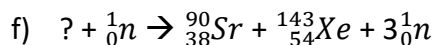
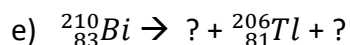
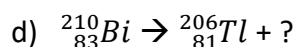
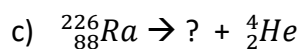
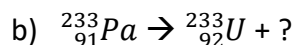
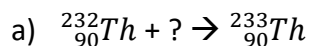
14. Radon-222, $^{222}_{86}\text{Rn}$ is used to decay by alpha particle emission. Write a balanced nuclear equation and name the element produced in this decay process. **[2 marks]**

15. Write the balanced nuclear equation for the radioactive decay of potassium-40 by emission of a beta-particle. **[2 marks]**

16. What radioisotope decays by beta particle emission to form $^{47}_{21}\text{Sc}$? **[2 marks]**

17. Complete each nuclear equation. Then state the type of nuclear reaction that each equation represents. **[14 marks]**

Type of Nuclear Reaction



18. Write a balanced nuclear equation to describe each of the following statements.

a. Radon-222 undergoes alpha decay forming Polonium-218 **[1 mark]**

b. Polonium-218 decays to Lead-214, emitting one other particle **[1 mark]**

19. Complete the table below: **[8 marks]**

Bond	Location of Partial Charges and EN value	Δ EN	Bond Type
C-F			
O-N			
Cl-Cl			
Cu-O			
Si-H			
Na-F			
Fe-O			
Mn-O			