Name : _____ Date : _____

Nuclear Chemistry Worksheet

Write the nuclear reactions for the following:

1. Technetium – 99 ($^{43}_{99}Tc$) decays by beta emission to form ruthenium – 99 ($^{99}_{44}Ru$)

2. Phosphorous – 22 decays by beta emission to form sulfur – 32

3. Francium – 212 ($^{212}_{87}Fr$) decays by alpha emission

4. Fluorine – 18 decays to oxygen – 18 by positron emission

5. Sodium – 24 decays by beta emission

6. Krypton – 76 absorbs a beta particle to form bromine – 76

7. Aluminum – 27 absorbs an alpha particle to form phosphorous – 30 and emits a neutron.

8. Nitrogen – 14 absorbs an alpha particle to form oxygen – 17 and emits a proton

9. A particular atom absorbs a neutron to form U-236. No particle is emitted.

10. When neptunium – 239 decays, plutonium – 239 forms, and a particle is emitted.

Name : _____ Date : _____

Nuclear Chemistry Worksheet

Write the nuclear reactions for the following:

1. Technetium – 99 ($^{43}_{99}Tc$) decays by beta emission to form ruthenium – 99 ($^{99}_{44}Ru$)

$$(^{99}_{43}Tc) \rightarrow {}^{0}_{-1}e + {}^{99}_{44}Ru$$

2. Phosphorous – 22 decays by beta emission to form sulfur – 32

$$^{32}_{15}P \rightarrow {}^{0}_{-1}e + {}^{32}_{16}S$$

3. Francium – 212 ($^{212}_{87}Fr$) decays by alpha emission

$$^{212}_{87}Fr \rightarrow {}^{4}_{2}He + {}^{208}_{85}S$$

4. Fluorine – 18 decays to oxygen – 18 by positron emission

$$^{18}_{9}F \rightarrow {}^{0}_{1}e + {}^{18}_{8}O$$

5. Sodium – 24 decays by beta emission

$$^{24}_{11}Na \rightarrow {}^{0}_{-1}e + {}^{24}_{12}Mg$$

6. Krypton – 76 absorbs a beta particle to form bromine – 76

$$^{76}_{36}Kr + {}^{0}_{-1}e \rightarrow {}^{76}_{35}Br$$

7. Aluminum – 27 absorbs an alpha particle to form phosphorous – 30 and emits a neutron.

$$^{27}_{13}Al + {}^{4}_{2}He \rightarrow {}^{30}_{15}P + {}^{1}_{0}n$$

8. Nitrogen – 14 absorbs an alpha particle to form oxygen – 17 and emits a proton

$$^{14}_{7}N + {}^{4}_{2}He \rightarrow {}^{17}_{8}O + {}^{1}_{1}p$$

9. A particular atom absorbs a neutron to form U-236. No particle is emitted.

$$^{235}_{92}U + {}^{1}_{0}n \rightarrow {}^{236}_{92}U$$

10. When neptunium – 239 decays, plutonium – 239 forms, and a particle is emitted.

$$^{239}_{93}Np \rightarrow {}^{239}_{94}Pu + {}^{0}_{-1}e$$