Name: _____ Table O, Table N, Periodic Table Date: _____

Balancing Nuclear Decay Equations Practice

Please write each of the following decay equations:

1. Pu-239 $^{239}_{94}Pu \rightarrow {}^{4}_{2}He + {}^{235}_{92}U$

2. Iodine-131 $^{131}_{53}I \rightarrow {}^{0}_{-1}e + {}^{131}_{54}Xe$

3. Cobalt-60 $^{60}_{27}Co \rightarrow {}^{0}_{-1}e + {}^{60}_{28}Ni$

4. Calcium-37 $^{37}_{20}Ca \rightarrow {}^{0}_{+1}e + {}^{37}_{19}K$

5. Uranium-235 $^{235}_{92}U \rightarrow {}^{4}_{2}He + {}^{231}_{90}Th$

Please complete each of the following nuclear decay equations by identifying the missing component and indicate if the equation is artificial or natural transmutation.

Nuclear Equation	**Natural or Artificial Transmutation**
6. $^{240}_{94}Pu \rightarrow$ $^{236}_{92}U$ + $^{4}_{2}He$	Natural Transmutation
7. $^{27}_{13}Al +$ $^{0}_{+1}e$ $\rightarrow$ $^{27}_{14}Si$	Artificial Transmutation
8. $^{210}_{84}Po \rightarrow$ $^{0}_{-1}e$ + $^{210}_{85}At$	Natural Transmutation
9. $^{2}_{1}H + {}^{2}_{1}H \rightarrow$ $^{4}_{2}He$	Artificial Transmutation
10. $^{209}_{83}Bi \rightarrow {}^{1}_{1}p +$ $^{205}_{82}Pb$	Natural Transmutation

Name: _____ **Date:** _____

Balancing Nuclear Decay Equations Practice

11. $^{239}Pu \rightarrow {}^{4}_{2}He +$ $^{235}_{92}U$ — Natural Transmutation

12. $^{235}U \rightarrow$ $^{4}_{2}He$ $+ {}^{231}Th$ — Natural Transmutation

* 13. $^{27}_{13}Al \rightarrow {}^{27}_{11}Na +$ $2\,(^{0}_{+1}e)$ — Natural Transmutation

2 positrons released

14. $^{37}K \rightarrow {}^{0}_{-1}e +$ $^{37}_{20}Ca$ — Natural Transmutation

15. $^{188}Re +$ $^{1}_{0}n$ $\rightarrow {}^{189}Re$ — Artificial Transmutation