Nuclear Reactions

Name ______________________

Fill in the blanks with the appropriate atomic symbols. Make sure you use the law of conservation of mass to solve these problems.

1. $^{37}_{18}Ar + ^{0}_{-1}e \rightarrow \underline{\text{_______}}$

2. $^{214}_{83}Bi \rightarrow ^{214}_{84}Po + \underline{\text{_______}}$

3. $^{251}_{98}Cf \rightarrow ^{247}_{96}Cm + \underline{\text{_______}}$

4. $^{234}_{91}Pa \rightarrow \underline{\text{_______}} + ^{0}_{-1}e$

5. $^{227}_{89}Ac \rightarrow \underline{\text{_______}} + ^{0}_{-1}e$

6. $^{234}_{91}Pa \rightarrow \underline{\text{_______}} + ^{4}_{2}He$

7. $^{42}_{19}K \rightarrow ^{0}_{-1}e + \underline{\text{_______}}$

8. $^{9}_{4}Be + ^{4}_{2}He \rightarrow \underline{\text{_______}}$

9. $^{22}_{11}Na + \underline{\text{_______}} \rightarrow ^{22}_{10}Ne$

10. $\underline{\text{_______}} \rightarrow ^{4}_{2}He + ^{208}_{82}Tl$

11. $^{99}_{43}Tc \rightarrow \underline{\text{_______}} + ^{0}_{-1}e$

12. $^{239}_{94}Pu \rightarrow \underline{\text{_______}} + ^{4}_{2}He$

13. For #1-12 go back and label each reaction as involving an alpha, beta, or gamma particle. Label also whether it is an example of decay (that particle being given off) or capture (that particle being taken in.)

14. Write the equation for the alpha decay of curium-247

15. Write the equation for the beta capture of manganese-53

16. Write the equation for the beta decay of sulfur-35

17. Write the equation for the beta capture of tellurium-121

18. Write the equation for when gamma radiation is given off by carbon-13.

Identify whether each of the following will undergo alpha decay, beta decay, or beta capture

19. einsteinium-252 ______________________ 21. krypton-79 ______________________

20. strontium-85 ______________________ 22. palladium-109 ______________________

21. americium-243 ______________________ 23. zinc-62 ______________________

24. What is happening when gamma radiation is given off?