WS 6.2 - Nuclear Reactions

Complete each of the following nuclear reactions by determining the missing particle, then name that particle ("alpha particle" or "uranium-233", etc...) #1 is an example...

1. $^{14}_{6}C \rightarrow ^{14}_{7}N + \beta^{-1}_{-1} \text{  beta particle}$

2. $^{40}_{18}Ar \rightarrow \text{ } + {0}_{-1}e$  

3. $^{252}_{98}Cf \rightarrow \text{ } + ^{106}_{42}Mo + ^{4}_{0}n $  

4. $^{9}_{4}Be + \text{ } \rightarrow ^{12}_{6}C + ^{1}_{0}n$  

5. $^{6}_{3}Li + ^{12}_{6}C \rightarrow ^{17}_{9}F + \text{ }$  

6. $^{60}_{27}Co \rightarrow ^{60}_{26}Fe$  

7. $^{4}_{2}He + ^{4}_{2}He \rightarrow ^{7}_{4}Be + \text{ }$  

8. $^{235}_{92}U + ^{1}_{0}n \rightarrow ^{144}_{55}Cs + ^{90}_{37}Rb + \text{ }$  

9. $\text{ } \rightarrow ^{3}_{2}He + ^{229}_{90}Th$  

10. $^{28}_{14}Si \rightarrow ^{30}_{15}P$  

11. $^{40}_{19}K + ^{1}_{0}n \rightarrow ^{41}_{18}Ar + \text{ }$  

12. $^{24}_{12}Mg \rightarrow ^{22}_{11}Na + \alpha$  

13. $^{239}_{90}Th \rightarrow ^{223}_{84}Po + ^{2}_{1}He + \text{ }$  

14. $^{246}_{92}Pu \rightarrow ^{98}_{44}Mo + \text{ } + ^{5}_{0}n$  

15. Write the reaction for a Rn-224 atom undergoing 1 beta decay: What is the daughter? _____

16. Write the reaction for a Po-218 atom undergoing 1 alpha decay: What is the daughter? _____

17. What particle is produced when a U-234 atom undergoes a series of two alpha decays and three beta decays?

18. Pb-210 undergoes a series of alpha and beta decays to end up eventually as Ir-198. How many alpha particles and how many beta particles were emitted in all? Hint: do alpha's first, then beta's. $\alpha =$ _____  $\beta =$ _____ (show work)

Ans(IRO) #1-17: alpha particle beta particle barium-142 deuteron francium-224 lead-214 positron potassium-40 protactinium-226 proton 3-protons neutron neutron 2-neutrons tellurium-144 uranium-233