**HONORS HOMEWORK 6.1C – NUCLEAR ENERGY**

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| 1. | Hydrogen has three isotopes: protium ( – 1.0073 amu), deuterium ( – 2.0136 amu) and tritium ( – 3.0160 amu), | | |
| (a) | Calculate the mass per nucleon of the three isotopes of hydrogen (in amu):  (ie divide the mass in amu by the mass number) | |
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| (b) | Hence explain which of the three isotopes of hydrogen is the most stable. | |
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| 2. | Write nuclear equations for the following reactions: | | |
| (a) | The fission of uranium-235 into rubidium-90 and caesium-143 | |
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| (b) | The fusion of carbon-13 and protium (hydrogen-1) to give a single product | |
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| (c) | The reaction between deuterium and helium-3 to produce helium-4 and one other product | |
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| 3. | (a) | According to the Crash Course Video (or a google search), which atom has the most stable nucleus? | |
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| (b) | Consider the following elements: aluminium, carbon, gold, lead, nitrogen, silver | |
| (i) | Which of these atoms are most likely to take part in fission reactions, and why? |
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| (ii) | Which of these atoms are most likely to take part in fusion reactions, and why? |
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| (c) | Which country produces the greatest percentage of its energy through nuclear fission, and what percentage is this? | |
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| (d) | What percentage of energy production in the USA comes from nuclear fission? | |
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| (e) | Who were “little boy” and “fat man”? | |
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(For 3c, 3d and 3e, just do a google search)