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Crash Course Chemistry #39: Fusion and Fission

Name: _____ Date: _____

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1. The concept of nuclear _____ refers to how well the nucleus of an atom stays together.
2. The energy that holds nucleons together is called _____ energy.
3. The famous formula used to calculate binding energy is _____.
4. The particles found in the nucleus (protons and neutrons) are collectively known as _____.
5. The difference in mass between the individual nucleons and the nucleus itself is called the _____.
6. The mass-energy equivalence formula shows that mass is interchangeable with _____.
7. A nuclear _____ reaction occurs when a heavy nucleus splits into two smaller nuclei.
8. A nuclear _____ reaction happens when two light nuclei combine to form a heavier one.
9. The most stable elements have the highest _____ energy per nucleon.
10. The most commonly used fuel for nuclear fission is _____-235.
11. The uncontrolled multiplication of fission reactions leads to a _____ reaction.
12. Nuclear _____ are used to absorb neutrons and control the rate of reaction in reactors.
13. Fission reactions produce many radioactive _____ with various half-lives.
14. Fusion reactions require extremely high temperatures and pressures because nuclei naturally _____ each other.
15. At extremely high temperatures, matter becomes a state called _____.

Crash Course Chemistry #39: Fusion and Fission KEY

1. The concept of nuclear **stability** refers to how well the nucleus of an atom stays together.
2. The energy that holds nucleons together is called **binding** energy.
3. The famous formula used to calculate binding energy is $E = mc^2$.
4. The particles found in the nucleus (protons and neutrons) are collectively known as **nucleons**.
5. The difference in mass between the individual nucleons and the nucleus itself is called the **mass defect**.
6. The mass-energy equivalence formula shows that mass is interchangeable with **energy**.
7. A nuclear **fission** reaction occurs when a heavy nucleus splits into two smaller nuclei.
8. A nuclear **fusion** reaction happens when two light nuclei combine to form a heavier one.
9. The most stable elements have the highest **binding** energy per nucleon.
10. The most commonly used fuel for nuclear fission is **uranium-235**.
11. The uncontrolled multiplication of fission reactions leads to a **chain** reaction.
12. Nuclear **control rods** are used to absorb neutrons and control the rate of reaction in reactors.
13. Fission reactions produce many radioactive **isotopes** with various half-lives.
14. Fusion reactions require extremely high temperatures and pressures because nuclei naturally **repel** each other.
15. At extremely high temperatures, matter becomes a state called **plasma**.

15 Questions

Answer Key Included

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