Alpha & Beta Decay Questions for GCSE Physics

1. What is meant by the term atomic number?

2. From which part of an atom is nuclear radiation emitted?

3. What is a nucleon?

4. State what the mass number tells you about a nucleus.

5. A uranium-238 nucleus has an atomic number of 92. Calculate the number of neutrons in this nucleus.

VideoPlato Academy | © VideoPlato 2025 | Not to be copied or reproduced without licence.

6. Describe the composition of an alpha particle.

7. An alpha particle has the same structure as the nucleus of which element? State its relative charge.

8. State how the atomic number and mass number change during alpha decay.

9. Explain why alpha decay changes the nucleus into the nucleus of a different element.

10. Uranium-238 (atomic number 92) emits an alpha particle to form thorium. State the atomic number and mass number of the thorium nucleus.

© VideoPlato 2025 | Not to be copied or reproduced without licence.

11. What type of particle is emitted during beta-minus decay?

12. Describe the change that occurs to a neutron in the nucleus during beta-minus decay.

13. State the relative charge of a beta-minus particle.

14. State how the atomic number changes during beta-minus decay.

15. Explain why the mass number remains unchanged during beta-minus decay.

© VideoPlato 2025 | Not to be copied or reproduced without licence.

16. Write a balanced nuclear equation for the alpha decay of uranium-238 (atomic number 92 and symbol U) into thorium (Th).

17. Plutonium-239 (atomic number 94 and symbol Pu) decays by alpha emission into uranium (U). Write a balanced nuclear equation for this decay.

18. Carbon-14 (atomic number 6 and symbol C) decays by beta-minus emission into nitrogen (N). Write a balanced nuclear equation for this decay.

19. Molybdenum-99 (atomic number 42 and symbol Mo) decays by beta-minus emission into technetium (Tc). Write a balanced nuclear equation for this decay.

20. A nucleus has a mass number of 238 and an atomic number of 92. It emits one alpha particle followed by two beta-minus particles. Calculate its final mass number and atomic number.

© VideoPlato 2025 | Not to be copied or reproduced without licence.