

Atoms and nuclear radiation recall questions

1. What causes radioactive decay? **An unstable nucleus**
2. What are the units of activity? **Becquerels (Bq)**
3. What does a Geiger-Muller tube detect? **Ionising radiation**
4. What are the four different types of nuclear radiations emitted? **Alpha particles, beta particles, gamma rays, neutrons**
5. Which one is an electron? (β) A helium nucleus? (α) An em wave? (γ)
6. Which one of these is stopped by paper? (α) By thin metal? (β) By thick lead? (γ)
7. How far can each type of ionising radiation travel through air? **A few centimetres for α , A metre for β , very far for γ .**
8. Which type of radiation is most ionising?
9. What are the symbols for alpha particles and beta particles in nuclear equations? ${}^4_2\text{He}$ ${}^0_{-1}\text{e}$
10. Nuclear equation problems. **Make sure left and right side of arrow numbers balance**
11. What is the time taken for the number of radioactive nuclei to halve called? **Half-life**
12. Drawing and interpreting radioactive decay graph problems. **Lines on a graph to determine the half-life.**

Atoms and nuclear radiation application questions

1. Explain which type of radiation would be best for detecting a leak in an underground pipe.
2. Explain which type of radiation would be best for controlling the thickness of aluminium foil when it is being produced.
3. Explain which type of radiation would be best for ionising air in a smoke detector.
4. What change in mass and charge does alpha decay cause?
5. What change in mass and charge does beta decay cause?
6. What are two definitions of half-life?
7. What fraction of the original material will be radioactive after five half-life events?
8. A radioactive sample has a starting count rate of 32,000, After one hour the count rate is 2,000. Calculate its half-life.
9. Compare radioactive contamination and irradiation.