Atomic structure and radioactivity

Physics Paper 1 | 30 quick questions

GCSE science knowledge recall

Answer online, marked instantly

Name: _____ **Date:** _____ **Score:** _____ **/ 30**

1 Roughly what is the radius of an atom, in metres? Give the power of ten.

2 Which two particles are found in the nucleus of an atom?

3 What is the relative charge of an electron?

4 If an atom absorbs electromagnetic radiation, an electron can move to an energy level further from the nucleus or closer to the nucleus. Which?

5 What is the name for the number of protons in the nucleus of an atom? Answer in two words.

6 What is the name for the total number of protons and neutrons in an atom? Answer in two words.

7 What is the name for atoms of the same element with different numbers of neutrons?

8 An atom has mass number 23 and atomic number 11. How many neutrons does it have?

9 What is formed when an atom loses one or more outer electrons? Answer in two words.

10 Which particle was discovered first, leading to the plum pudding model of the atom?

11 Which particles were fired at thin gold foil in the scattering experiment that led to the nuclear model?

12 Which scientist suggested that electrons orbit the nucleus at fixed distances (energy levels)?

13 Which scientist provided evidence for the neutron, about 20 years after the nucleus was accepted?

14 What is the name for the rate at which a source of unstable nuclei decays? Answer in one word.

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15 What is the unit of activity? Give the name.

16 Which type of nuclear radiation is made of two protons and two neutrons?

17 A beta particle is a fast-moving electron. Where is it emitted from?

18 Which type of nuclear radiation is the most ionising?

19 Which type of nuclear radiation is stopped only by thick lead or several metres of concrete?

20 In alpha decay, by how much does the mass number of the nucleus go down?

21 In beta decay, does the atomic number go up by 1, go down by 1 or stay the same?

22 What is the name for the time it takes for the number of unstable nuclei in a sample to halve? Answer in one word.

23 A source has a count rate of 800 counts per minute and a half-life of 2 hours. What is the count rate after 6 hours, in counts per minute?

24 After 2 half-lives, what fraction of the original unstable nuclei have decayed? Give a fraction.

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25 Describe in one sentence the difference between radioactive contamination and irradiation.

26 What is the name for the low-level radiation around us all the time from natural and man-made sources? Answer in two words.

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27 Is radiation dose measured in becquerels or sieverts?

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28 Explain in one sentence why a radioactive tracer injected into the body should emit gamma rather than alpha.

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29 What is the name for the splitting of a large, unstable nucleus such as uranium into two smaller nuclei? Answer in two words.

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30 What is the name for the joining of two light nuclei to form a heavier nucleus, as happens in stars? Answer in two words.

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