



SP6 Radioactivity

Personal learning checklist | 1 of 2

GCSE Edexcel Separate Sciences | Physics Paper 1

Name _____ Class _____ Date _____

Tick one box for each statement. Red: need help. Amber: partly confident.
Green: can do independently.

I can	Red	Amber	Green
Atomic evidence and particles			
Explain atomic-model development using plum pudding, alpha scattering, nuclear structure and Bohr energy levels.	☐	☐	☐
Compare subatomic particles and calculate atomic, mass, neutron and electron numbers, including isotopes.	☐	☐	☐
Describe typical atomic scale and the much smaller nucleus.	☐	☐	☐
Explain electron energy-level changes, radiation absorption and emission, line spectra and positive-ion formation.	☐	☐	☐
Detection and background			
Describe natural and artificial background sources and distinguish activity from detector count rate.	☐	☐	☐
Describe Geiger-Müller and film detection, subtract background and explain random count variations and longer measurements.	☐	☐	☐
Nuclear radiation and changes			
Describe random nuclear decay and compare alpha, beta-minus, beta-plus, gamma and neutron emissions.	☐	☐	☐
Compare radiation ionisation, penetration, range and appropriate shielding.	☐	☐	☐
Predict mass-number and proton-number changes and balance alpha, beta, gamma and neutron equations.	☐	☐	☐
Half-life			
Explain half-life and decreasing activity while distinguishing sample predictions from individual random decays.	☐	☐	☐
Calculate remaining activity and elapsed time over successive half-lives.	☐	☐	☐
Determine half-life from corrected count-rate graphs and interpret background effects.	☐	☐	☐

My next revision priority _____



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Hazards and precautions			
Explain ionising-radiation tissue damage and compare internal alpha contamination with penetrating external radiation.	☐	☐	☐
Distinguish irradiation from contamination and explain time, distance, shielding, storage and medical exposure precautions.	☐	☐	☐
Radiation applications			
Explain radiation selection for smoke alarms, sterilisation and thickness monitoring.	☐	☐	☐
Evaluate radiation hazards using half-life, activity, penetration and exposure route.	☐	☐	☐
Compare internal and external radiotherapy and explain careful dose planning.	☐	☐	☐
Explain medical tracers, positrons, PET detection and nearby tracer production.	☐	☐	☐
Nuclear fission			
Explain nuclear energy release, uranium-235 fission and chain reactions.	☐	☐	☐
Explain moderators and control rods in a controlled reactor.	☐	☐	☐
Describe electricity generation from fission and radioactive-product management.	☐	☐	☐
Evaluate nuclear power using energy, emissions, cost, safety and waste evidence.	☐	☐	☐
Nuclear fusion			
Compare fusion, fission and decay and explain fusion energy release.	☐	☐	☐
Explain fusion's temperature and confinement requirements and practical power-generation difficulties.	☐	☐	☐

My next revision priority _____