CP6 Radioactivity

CP6a Atomic models
Describe the structure of an atom (in terms of nucleus and electrons).
State where most of the mass of an atom is found.
State the sizes of atoms and small molecules.
Describe an early model of the atom.
Describe how and why our model of the atom has changed over time, including the plum pudding model and the Rutherford alpha particle scattering.
CP6b Inside atoms
State what is meant by an isotope.
Represent isotopes using symbols.
Explain how atoms of different elements are different (in terms of numbers of electrons and protons).
Recall the charges and relative masses of the three subatomic particles.
Explain why all atoms have no overall charge.
CP6c Electrons and orbits
Describe where electrons are found inside atoms (in terms of shells).
Describe when electrons can change orbit.
Recall what an ion is.
Describe how ionisation occurs.
Describe some of the evidence for the Bohr model of the atom.
CP6d Background radiation
Explain what background radiation is.
Describe how radiation measurements need to be corrected for background radiation.
List some sources of background radiation.
Describe how photographic film can be used to detect radioactivity.
Describe how a Geiger-Müller tube works.
Describe how the amount of radioactivity can be measured (in terms of the darkness of photographic film or by attaching a counter to a GM tube).
CP6e Types of radiation
List five types of radiation that are emitted in random processes from unstable nuclei.
State that the five types of radiation are ionising radiations.
Describe what alpha and beta particles are.
Describe the nature of gamma radiation.

Compare the penetrating abilities of alpha, beta and gamma radiation.
Compare the ionisation abilities of alpha, beta and gamma radiation.
CP6f Radioactive decay
Describe the process of β^- decay.
Describe the process of β^+ decay.
Explain how the proton and mass numbers are affected by different kinds of radioactive decay.
Describe what happens during nuclear rearrangement after radioactive decay.
Balance nuclear equations for mass and charge.
CP6g Half-life
Describe how the activity of a substance changes over time.
State how half-life can be used to describe the changing activity of a substance.
Recall the unit of activity.
Describe how half-life can be used to work out how much of a substance will decay in a certain time.
Carry out calculations involving half-life.
CP6h Dangers of radioactivity
Describe the hazards of ionising radiation in terms of tissue damage and possible mutations.
Explain the precautions taken to reduce the risks from radiation and ensure the safety of patients exposed to radiation.
Explain the precautions taken to reduce the risks from radiation and protect people who work with radiation.
Describe the differences between contamination and irradiation effects.
Compare the hazards of contamination and irradiation.