**Section 1 – Atomic Structure & Ionisation**

1. State that nuclear radiation is emitted from unstable nuclei.
2. Describe the model of the atom in terms of protons, neutrons and electrons.
3. Describe the nature of alpha (α), beta (β) and gamma (γ) radiation.
4. Describe the penetration properties α, β and γ radiations.
5. Describe the penetration properties α, β and γ radiations, **in air.**
6. Explain the terms *ion* and *ionisation*.
7. Compare the ionisation properties of α, β and γ radiations.

**Section 2 – Activity & Half-life**

1. State that nuclear decay is a random process.
2. Describe what is meant by the *activity* of a radioactive source.
3. State some natural and some man-made sources of background radiation.
4. State that the activity of all radioactive sources decreases with time.
5. Explain the meaning of the term *half-life*.
6. Determine the half-life of a radioactive source from a graph of activity or corrected count rate vs time.
7. Determine the half-life of a radioactive source using; initial/final activity and elapsed time.
8. Carry out calculations using the equation;

|  |
| --- |
|  |

**Section 3 – Applications**

1. State the possible effects on nuclear radiation on living cells
2. Describe some safety precautions that must be observed when handling radioactive sources.
3. Describe an advantage of nuclear radiation
4. Describe a disadvantage of nuclear radiation

**Section 1 – Atomic Structure & Ionisation**

1. State that nuclear radiation is emitted from unstable nuclei.
2. Describe the nuclear model of the atom in terms of protons, neutrons and electrons.
3. Describe the nature of alpha (α), beta (β) and gamma (γ) radiation.
4. Describe the penetration properties α, β and γ radiations.
5. Describe the penetration properties α, β and γ radiations, **in air.**
6. Explain the terms *ion* and *ionisation*.
7. Compare the ionisation properties of α, β and γ radiations.

**Section 2 – Activity & Half-life**

1. State that nuclear decay is a random process.
2. Describe what is meant by the *activity* of a radioactive source.
3. State some natural and some man-made sources of background radiation.
4. State that the activity of all radioactive sources decreases with time.
5. Explain the meaning of the term *half-life*.
6. Determine the half-life of a radioactive source from a graph of activity or corrected count rate vs time.
7. Determine the half-life of a radioactive source using; initial/final activity and elapsed time.
8. Carry out calculations using the equation;

|  |
| --- |
|  |

**Section 3 – Applications**

1. State the possible effects on nuclear radiation on living cells
2. Describe two uses of radiation based on that properties mentioned above in learning outcome one.
3. Describe some safety precautions that must be observed when handling radioactive sources.
4. State that nuclear radiation is easy to detect
5. Describe how some radioactive sources could be used as a *tracer*.