



Total Mark: 10

Please answer two questions only

Questions One

I.a. Deduce the decay law of radionuclides and physical half life.

I.b. If 3.0 MBq of I-131 is needed for a diagnostic test, and if 4 days elapse between shipment of the radioiodine and its use in the test, how many Bq must be shipped ? ,

Question Two

2.a. Discuss the categories of radioactive transformation mechanisms

2.b. Calculate the specific activity of Cs-137 in Bq/m³ at 25 C and 760 mm Hg.

Constants

Physical half lives for Ra-226 is 1600 years

Atomic Mass for Ra-226 is 226

Constant

T_{1/2} for I-131 = 8 days

T_{1/2} for Cs-137 = 30.5 years

Question three

Choose the correct answer

1. Absorbed dose is defined as the joule per kilogram J/Kg, termed the

- One Gray
- Rad
- Ci

d. Sievert

2-The Curie is the number of disintegration per second take place in 1 gm of Ra- 226, which

- a. 3.7×10^{10} dps
- b. 1 dps
- c. 2.7×10^{-11} dps
- d. 37 TBq

3. Different isotopes of the same element will have equal numbers of

- a. electrons
- b. protons and electrons
- c. electrons and neutrons