Saudi Arabia Kingdom Ministry of Education Umm Al- Qura University Applied Science Faculty Physics Department Exam1



Medical Physics Program Medical Radiation Physics1 Course Code (4032485-4) Exam Time: 90 minutes 1439-1440, First Semester

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

T1/2 for I-131 = 8 drays

T1/2 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 thea. One Grayb. Radc. 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 E 10dpsb. 1 dpsc. 2.7 E-11 dpsd. 37 TBq

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

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