

[LL 1017]

OCTOBER 2017

Sub. Code: 4014

**M.Sc. MEDICAL PHYSICS EXAMS
FIRST YEAR
PAPER IV – RADIATION DOSIMETRY AND STANDARDIZATION**

Q.P. Code : 284014

Time : Three hours

Maximum : 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Explain about the IAEA TRS – 398 protocol and calibration of cobalt beams using this protocol.
2. a) Define exposure and absorbed dose.
b) Explain about Kerma in detail and derive a relationship between Kerma and exposure.
c) Show that the roentgen to rad conversion factor for air is 0.876 under CPE.

II. Write notes on:

(10 x 6 = 60)

1. Mass energy transfer and Mass energy absorption coefficients.
2. Photo neutrons.
3. Cyclotron produced isotopes.
4. Bragg–Gray cavity theory
5. Beta gamma coincidence counting.
6. Explain about the free air ionization chamber with a neat diagram.
7. Fricke dosimeter.
8. Define apparent activity, Reference Air Kerma Rate, Air Kerma Rate constant.
9. Chemical dosimeters in radiotherapy.
10. Theory and operation of Silicon Diode detectors.
