[LF 1014] **OCTOBER 2014** **Sub. Code: 4014**

M.Sc., MEDICAL PHYSICS DEGREE EXAMINATION
(Revised Regulations for Candidates admitted from 2010-2011 Batch onwards)
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 in detail about the calibration of high energy photons using IAEA TRS-398 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. Classification of neutrons based on energy.
3. Charge particle equilibrium.
4. Cyclotron produced isotopes.
5. Bragg –Gray cavity theory
6. Beta gamma coincidence counting.
7. Explain about the free air ionization chamber with a neat diagram.
8. Fricke dosimeter.
9. Chemical dosimeters in radiotherapy.
10. Define apparent activity, Reference Air Kerma Rate, Air Kerma Rate constant.

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