[LJ 1016] OCTOBER 2016 **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. State the Bragg-Gray cavity theory and derive the mathematical expression for absorbed dose to medium in terms of cavity ionization.

2. Absorbed dose calibration of high energy photon beams with $N_{D,\ W}$ with neat sketch.

II. Write notes on: **(10 x 6 = 60)**

1. Define kerma and components of kerma.
2. Photoneutron.
3. Transient charge particle equilibrium.
4. Cross-calibration.
5. Distinguish narrow beam geometry and broad beam geometry.
6. Linear energy transfer and dose rate effects.
7. Standardization of gamma emitters with scintillation spectrometers.
8. Free-air ionization chamber.
9. Cyclotron-produced isotopes.
10. Ambient and directional dose equivalents.

****