

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 1022]

OCTOBER 2022

Sub. Code: 2402

**M.Sc. RADIOTHERAPY TECHNOLOGY
FIRST YEAR**

(Candidates admitted from 2019-2020 onwards – Paper II)

(Candidates admitted from 2020-2021 onwards – Paper III)

**PAPER II & III – IMAGING MODALITIES, EQUIPMENT OPERATION
SAFETY AND MAINTENANCE RELATED TO RADIOTHERAPY AND
MEDICAL PHYSICS**

Q.P. Code : 282402

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate notes on: (2 x 20 = 40)

1. Briefly explain photoelectric effect, Compton effects and pair production and relative importance of each other.
2. What is workload, Occupancy and Use factor? Explain with suitable diagrams the barrier calculations of a 6MV linear accelerator.

II. Write Short Notes on: (10x6 = 60)

1. Define the term radiation. Compare X – rays and gamma rays. Explain the three types of half-life.
2. Write the occupational dose limits in detail.
3. Define and Explain: Exposure, Kerma and absorbed dose and its relationship.
4. Define the following: organ dose, equivalent dose, effective dose, committed dose and collective dose.
5. Write in detail with suitable diagram the Thermo Luminescence Dosimeters (TLD) and Optically Stimulated Luminescence Dosimeter (OSLD).
6. Explain in detail the philosophy of radiation protection.
7. What is primary standard? Explain in detail?
8. What is heel effect? How will you compensate it? Explain clinical importance.
9. Explain with suitable diagram free air chamber.
10. Explain Somatic effects and Hereditary effects.
