

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

[AHS 0921]

**SEPTEMBER 2021
(MAY 2021 EXAM SESSION)**

Sub. Code: 2402

**M.Sc. RADIOTHERAPY TECHNOLOGY
FIRST YEAR (From 2019-2020 onwards)
PAPER II – 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. As per IAEA TRS 398 protocol, write in detail calibration of 6MV X-ray beam.
2. Briefly explain photoelectric effect, Compton effects and pair production and relative importance of each other.

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

1. What is heel effect? How will you compensate it? Explain clinical importance.
2. Define and explain exposure, kerma and absorbed dose and its relationship.
3. Compare stationary and rotating anode X-ray tubes.
4. Write a note on telecobalt source and HDR brachytherapy source.
5. Explain Chromosomal aberration and its application for the biological dosimetry.
6. What is Radiation field analyzer? Explain its role in beam data measurements.
7. Explain in detail linear and mass attenuation coefficients, HVL and TVL.
8. Define the following ; Organ dose, Equivalent dose, Effective dose, Committed dose and Collective dose
9. Write in detail with suitable diagrams the Thermo Luminescence Dosimeters (TLD) and Optically stimulated Luminescence dosimeters (OSLD)
10. Write a detailed note Iridium-192 HDR source calibration.
