

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

[MD 0524]

MAY 2024

Sub. Code: 4077

M.D. DEGREE EXAMINATION

BRANCH XXVI - RADIATION ONCOLOGY

**PAPER I – BASIC PRINCIPLES IN PRACTICE OF RADIOTHERAPY
(PHYSICS, BIOLOGY, PATHOLOGY, EQUIPMENTS
AND TECHNIQUES OF RADIOTHERAPY)**

Q.P. Code: 204077

Time: Three Hours

Maximum: 100 Marks

I. Elaborate on:

(2 x 15 = 30)

1. Electron Beam characteristics and clinical application.
2. 6R”S in Radiation Treatment.

II. Write notes on:

(10 x 7 = 70)

1. Manchester System.
2. Percentage depth dose.
3. Wedges.
4. Tomotherapy.
5. Radiation cataractogenesis.
6. Bragg Peak.
7. Concomitant Boost.
8. Cell Cycle relevant to Radiation.
9. Dose limits to Public and Occupational Worker.
10. Adaptive Radiotherapy.

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

[MD 1224]

**DECEMBER 2024
(OCTOBER 2024 EXAM SESSION)**

Sub. Code: 4077

M.D. DEGREE EXAMINATION

**RADIO THERAPY
RADIATION ONCOLOGY**

**PAPER I – BASIC PRINCIPLES IN PRACTICE OF RADIOTHERAPY
(PHYSICS, BIOLOGY, PATHOLOGY, EQUIPMENTS
AND TECHNIQUES OF RADIOTHERAPY)**

Q.P. Code: 204077

Time: Three Hours

Maximum: 100 Marks

I. Elaborate on:

(2 x 15 = 30)

1. Discuss interaction of energy with matter. Highlight its importance in clinical practice.
2. Describe in detail, the different temporary interstitial brachytherapy dosage systems.

II. Write notes on:

(10 x 7 = 70)

1. Stochastic effects of Radiation.
2. Radiobiological effects of Radiation.
3. ICRU – 38.
4. Iridium – 192.
5. Linear quadratic Model.
6. Immobilization devices.
7. Proton therapy
8. Hypofractionation and its effects on late responding tissues,
9. Interaction between Chemotherapy and Radiotherapy.
10. Benefits of concomitant boost therapy with respect to radiobiology.

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

[MD 1025]

OCTOBER 2025

Sub. Code: 4077

M.D. DEGREE EXAMINATION

RADIO THERAPY

RADIATION ONCOLOGY

PAPER I – BASIC PRINCIPLES IN PRACTICE OF RADIOTHERAPY

**(PHYSICS, BIOLOGY, PATHOLOGY,
EQUIPMENTS AND TECHNIQUES OF RADIOTHERAPY)**

Q.P. Code: 204077

Time: Three Hours

Maximum: 100 Marks

I. Elaborate on:

(2 x 15 = 30)

1. Describe Total Body Irradiation (TBI) in detail.
2. Draw and explain the mammalian cell survival curve. Write about the mathematical models describing the cell survival curve.

II. Write notes on:

(10 x 7 = 70)

1. Maximum permissible dose.
2. Low level radiation effects.
3. Portal imaging.
4. Inverse dose rate effect.
5. Volumetric Modulated Arc Radiotherapy (VMAT).
6. Beam modifying devices.
7. Radiation Induced Cell Death.
8. Describe the Quality Assurance.
9. Respiratory gating techniques.
10. Radiation Protection.
