

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

[AHS 0122]

**JANUARY 2022
(OCTOBER 2021 EXAM SESSION)**

Sub. Code: 2413

**M.Sc. RADIOTHERAPY TECHNOLOGY
SECOND YEAR (From 2019-2020 onwards)
PAPER III-RECENT ADVANCES IN RADIOTHERAPY AND SPECIAL
RADIOTHERAPY PROCEDURES
Q.P. Code : 282413**

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. TBI techniques, clinical indications, physical aspects and invivo dosimetry.
2. Biologically Guided Radiation Therapy.

II. Write notes on:

(10 x 6 = 60)

1. Carbon beam therapy and its clinical applications.
2. Use of RPM in tumor motion management.
3. Intraoperative boost Electron Beam Therapy in breast cancer.
4. Iodine 125 and its clinical use.
5. Electronic brachytherapy.
6. Surface guided Radiotherapy.
7. Flat Vs. unflat beams.
8. TSET technique for non-ambulatory patient.
9. Perioperative HDR brachytherapy in soft tissue sarcoma.
10. Intensity Modulated Proton beam therapy.

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

[AHS 0522]

MAY 2022

Sub. Code: 2413

**M.Sc. RADIOTHERAPY TECHNOLOGY
SECOND YEAR (From 2019-2020 onwards)
PAPER III-RECENT ADVANCES IN RADIOTHERAPY AND SPECIAL
RADIOTHERAPY PROCEDURES
*Q.P. Code : 282413***

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Characteristics of flattening filter free beam and its clinical application.
2. Total Skin Electron Therapy technique for ambulatory and non-ambulatory patients.

II. Write notes on:

(10 x 6 = 60)

1. Pediatric Proton beam therapy.
2. Role of PET in Biologically Guided Radiotherapy.
3. Cesium 131 and its clinical use.
4. Use of electromagnetic transponders in tumor motion management.
5. Explain the principles of tumor tracking and delivery of dose by robotic linac.
6. Various TBI techniques.
7. Intraoperative HDR brachytherapy.
8. Electronic brachytherapy applicators.
9. Surface guided Radiotherapy.
10. Unique physical and radiobiological properties of carbon ion.

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

[AHS 1022]

OCTOBER 2022

Sub. Code: 2413

**M.Sc. RADIOTHERAPY TECHNOLOGY
SECOND YEAR (From 2019-2020 & 2020-2021 onwards)
PAPER - III - RECENT ADVANCES IN RADIOTHERAPY AND SPECIAL
RADIOTHERAPY PROCEDURES**

Q.P. Code : 282413

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. TBI techniques, clinical indications, physical aspects and invivo dosimetry.
2. Elaborate on steriotactic radiotherapy with mention of the immboilisation techniques, simulation and clinical applications.

II. Write notes on:

(10 x 6 = 60)

1. Boron neutron capture therapy.
2. Hyperthermia in Radiotherapy.
3. Flash Radiotherapy.
4. Image guided brachytherapy.
5. DIBH (Deep inspiration breath holding).
6. Gold 198 and its clinical use.
7. Unique physical and radiobiological properties of carbon ion.
8. Role of invivo dosimetry in TBI.
9. Electronic brachytherapy.
10. Compare flat and unflat beams.

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

[AHS 1023]

OCTOBER 2023

Sub. Code: 2413

**M.Sc. RADIOTHERAPY TECHNOLOGY
SECOND YEAR (From 2020-2021 onwards)
PAPER III - RECENT ADVANCES IN RADIOTHERAPY AND SPECIAL
RADIOTHERAPY PROCEDURES**

Q.P. Code: 282413

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Role of Intraoperative Brachytherapy in soft tissue sarcoma. Discuss the newer isotopes used in Brachytherapy.
2. Explain 4D and biologically guided Radiotherapy.

II. Write notes on:

(10 x 6 = 60)

1. Intensity modulated Proton beam therapy.
2. Total body Irradiation techniques.
3. Deep inspiration breathe holding technique in breast cancer.
4. Image guided Brachytherapy.
5. Intraoperative external beam therapy and its clinical Use.
6. Differentiate between flat and unflat beams.
7. What is FLASH radiotherapy?
8. Uses of carbon ion therapy.
9. Use of intraoperative electron beam therapy.
10. Iodine 125 uses in brachytherapy.

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

[AHS 1024]

OCTOBER 2024

Sub. Code: 2413

**M.Sc. RADIOTHERAPY TECHNOLOGY
SECOND YEAR (From 2020-2021 onwards)
PAPER III - RECENT ADVANCES IN RADIOTHERAPY AND SPECIAL
RADIOTHERAPY PROCEDURES**

Q.P. Code: 282413

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Total body Irradiation: Indications, planning and in-vivo dosimetry.
2. Stereotactic radiotherapy planning and indications. Explain the complete patient setup to treatments.

II. Write notes on:

(10 x 6 = 60)

1. Intensity modulated Proton beam therapy.
2. Electronic brachytherapy.
3. Motion management techniques in radiotherapy.
4. Image guided Brachytherapy for cancer cervix.
5. Intraoperative external beam therapy and its clinical Use.
6. Differentiate between flat and unflat beams.
7. Indications of Total skin electron radiation therapy. Explain the different patient positions.
8. Uses of carbon ion therapy.
9. Uses of Information technology for patient safety in radiotherapy.
10. Iodine 125 uses in brachytherapy.

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

[AHS 1025]

OCTOBER 2025

Sub. Code: 2413

**M.Sc. RADIOTHERAPY TECHNOLOGY
SECOND YEAR (From 2020-2021 onwards)
PAPER III - RECENT ADVANCES IN RADIOTHERAPY AND SPECIAL
RADIOTHERAPY PROCEDURES**

Q.P. Code: 282413

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Intraoperative radiotherapy and its types.
2. Total body irradiation: explain the complete process from patient setup to treatment delivery.

II. Write notes on:

(10 x 6 = 60)

1. Compare beam profiles of flat and unflat photon beams.
2. Explain Boron Neutron Capture Therapy.
3. Clinical indications of proton beam therapy.
4. Pd-103 in prostate brachytherapy.
5. Advantages and limitations of FFF beams and its clinical applications.
6. Radiation protection precautions to be taken during intraoperative brachytherapy.
7. Components of electronic brachytherapy system.
8. Use of Beam modifying devices in TBI.
9. Paediatric proton beam therapy.
10. Use of EM transponders in tumour motion management.
