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

[AHS 0222] **FEBRUARY 2022** **Sub. Code: 2404**
(OCTOBER 2021 EXAM SESSION)

M.Sc. RADIOTHERAPHY TECHNOLOGY
FIRST YEAR
(Candidates admitted from 2019-2020 onwards – Paper IV)
(Candidates admitted from 2020-2021 onwards – Paper V)
PAPER IV & V – ADOPTION OF NEW RADIOTHERAPY TECHNOLOGY, RADIATOIN HAZARDS, EVALUATION AND CONTROL
Q.P. Code : 282404

Time: Three hours **Answer ALL Questions** **Maximum: 100 Marks**

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

1. Patient immobilization devices.
2. Enlist the roles and responsibilities of radiation oncologists, medical physicists, Dosimetrists, radiotherapy technologist in ensuring the quality assurance in a radiotherapy establishment.

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

1. List the type and source of errors that can occur in radiation treatments.
2. Quality checks for beam light localiser and scales.
3. Types of Phantoms and beam data acquisition systems in quality assurance
4. How do you calibrate a brachytherapy source.
5. Mechanical and electrical checks that has to be carried out in a Co-60 unit.
6. Tissue Air Ratio & Tissue Maximum Ratio.
7. Advantages of tomotherapy.
8. Beam shaping devices in External beam radiotherapy.
9. What are the preventive maintenance steps you adhere to in your institution.
10. Quality assurance checks for a CT simulator.

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

[AHS 1022] **OCTOBER 2022** **Sub. Code: 2404**

M.Sc. RADIOTHERAPY TECHNOLOGY
FIRST YEAR
(Candidates admitted from 2019-2020 onwards – Paper - IV)
(Candidates admitted from 2020-2021 onwards – Paper - V)
Paper – IV & V – ADOPTION OF NEW RADIOTHERAPY TECHNOLOGY, RADIATION HAZARDS, EVALUATION AND CONTROL

Q. P. Code: 282404

Time: Three hours **Maximum : 100 Marks**

Answer ALL Questions

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

1. What are the isotopes used in radiotherapy department? Describe its physical and radioactive properties with suitable examples.

2. Quality assurance for photon beam in linear accelerator.

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

1. Beam Modifying Devices.
2. Tissue- Air Ratio (TAR), Tissue Maximum Ratio (TMR).
3. CT Simulator.
4. Tomotherapy.
5. QA of HDR brachytherapy machine.
6. Properties of electrons and protons.
7. Functions of Regulatory Body.
8. Monitoring instruments in radiation emergency.
9. Responsibilities of RSO.
10. Difference between SRS and SRT.

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

[AHS 1023] **OCTOBER 2023** **Sub. Code: 2404**

M.Sc. RADIOTHERAPY TECHNOLOGY
FIRST YEAR (From 2020-2021 onwards)
PAPER V – ADOPTION OF NEW RADIOTHERAPY TECHNOLOGY, RADIATION HAZARDS, EVALUATION AND CONTROL

Q. P. Code: 282404

Time: Three hours **Maximum: 100 Marks**

Answer ALL Questions

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

1. Physical components of a linear accelerator.

2. Tabulate the daily weekly monthly and annual quality assurance programme for a cobalt- 60 unit and its corresponding action levels.

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

1. Personnel monitoring devices.
2. Role of technicians in handling radiation emergencies.
3. Quality assurance checks for a CT simulator.
4. Beam Modifying Devices.
5. Acceptance tests.
6. Explain photo-electric and Compton Effect with examples.
7. List the different types of shutter systems used in Telecobalt machines.
8. Functions of Regulatory Body.
9. Optical and radiation field congruence.
10. Measurement and uses of half value thickness and tenth value thickness.

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

[AHS 1024] **OCTOBER 2024** **Sub. Code: 2404**

M.Sc. RADIOTHERAPY TECHNOLOGY
FIRST YEAR (From 2020-2021 onwards)
PAPER V – ADOPTION OF NEW RADIOTHERAPY TECHNOLOGY, RADIATION HAZARDS, EVALUATION AND CONTROL

Q. P. Code: 282404

Time: Three hours **Maximum: 100 Marks**

Answer ALL Questions

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

1. Enlist the possible errors that can occur in a external beam radiotherapy, describe the methodology and equipments used to measure these errors.

2. What are the isotopes used in radiotherapy department? Describe its physical and radioactive properties with suitable examples.

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

1. Tissue Air Ratio and Tissue Maximum Ratio.
2. What is the difference between SRS and SRT?
3. Constancy checks.
4. Beam shaping devices in External beam radiotherapy.
5. Properties of electrons and protons.
6. Percentage depth dose.
7. What are the 3 levels of membership in WHO's Radiation Emergency Medical Preparedness and Assistance Network (REMPAN)?
8. Advantages of tomotherapy.
9. Monitoring instruments in radiation emergency.
10. How do you calibrate a brachytherapy source?

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