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

[AHS 0321] MARCH 2021 Sub. Code: 2404

(OCTOBER 2020 EXAM SESSION)

M.Sc. RADIOTHERAPHY TECHNOLOGY

FIRST YEAR (From 2019-2020 onwards)

PAPER IV – 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. Tabulate the daily weekly monthly and annual quiality assurance programme for a cobalt-60 unit and its corresponding action levels.
2. What are the various Procedures followed for calibration of measuring and monitoring instruments.

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

1. Role of technicians in handling radiation emergencies.
2. Quality checks for Isocentre alignment
3. Explain photo-electric and compton effect with examples.
4. How do you monitor a dosimetric error and a geometric error.
5. Personnel monitoring devices.
6. What are the common procedures followed for calibration of measuring and monitoring instruments.
7. Acceptance tests.
8. Constancy checks.
9. Percentage depth dose.
10. Optical and radiation field congruence.

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

[AHS 0921] **SEPTEMBER 2021** **Sub. Code: 2404**
(MAY 2021 EXAM SESSION)

M.Sc. RADIOTHERAPHY TECHNOLOGY
FIRST YEAR (From 2019-2020 onwards)
PAPER IV – 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. Physical components of a linear accelerator.
2. Enlist the possible errors that can occur in a external beam radiotherapy, describe the methodology and equipments used to measure these errors.

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

1. Measurement and uses of half value thickness & tenth value thickness
2. What is the difference between SRS and SRT?
3. List the different types of shutter systems used in telecobalt machines.
4. The factors which influence the Tissue Air Ratio?
5. Immobilization devices used in external beam radiotherapy.
6. Acceptance tests
7. Constancy checks
8. Where are field instrument and reference dosimeter used and how frequently is a reference dosimeter calibrated.
9. What are the 3 levels of membership in WHO's Radiation Emergency Medical Preparedness and Assistance Network (REMPAN)
10. Which is the National Regulatory Body for radiation in India and its Responsibilities.

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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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