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

[AHS 0222] **FEBRUARY 2022** **Sub. Code: 2504**
(OCTOBER 2021 EXAM SESSION)

M.Sc. RADIOGRAPHY AND IMAGING TECHNOLOGY
FIRST YEAR
(Candidates admitted from 2019-2020 onwards – Paper IV)
(Candidates admitted from 2020-2021 onwards – Paper V)
PAPER IV & V – RADIATION SAFETY AND PROTECTION
Q.P. Code : 282504

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

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

1. Describe the quality assurance for computed tomography.
2. Explain in detail about the biological effects of radiation.

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

1. Write brief on X-ray output measurement.
2. Write short note on General radiography installation with plan layout.
3. Write short note on Radiation exposure control.
4. Write brief on AERB.
5. What are the responsibilities of radiological safety officer (RSO).
6. Write brief on the Geiger Muller (GM) counter.
7. Write short note on Pocket dosimeter.
8. What is Thermoluminescent dosimeter.
9. Write short note on dose limits to public.
10. Importance of X-Ray beam collimation.

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

[AHS 0522] **MAY 2022** **Sub. Code: 2504**

M.Sc. RADIOGRAPHY AND IMAGING TECHNOLOGY
FIRST YEAR
(Candidates admitted from 2019-2020 onwards – Paper IV)
(Candidates admitted from 2020-2021 onwards – Paper V)
PAPER IV & V – RADIATION SAFETY AND PROTECTION
Q.P. Code : 282504

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

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

1. Write in detail about advantages & disadvantages of various radiation detectors & appropriateness of different detectors for different type of radiation measurement.

2. Write in detail about quality control in digital imaging.

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

1. What is CT Dose Index (CTDI).
2. Write brief on Average Glandular Dose (AGD) in mammography.
3. What is ALARP?
4. Write short note on Protection in paediatric imaging.
5. Write short note on Film badge.
6. What are the dose reduction strategies used in fluoroscopy?
7. Write brief on Radiation survey meter.
8. What is eLORA?
9. Write short note on Film storage quality control.
10. What is QA phantom?

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

[AHS 1022] **OCTOBER 2022** **Sub. Code: 2504**

M.Sc. RADIOGRAPHY AND IMAGING TECHNOLOGY
FIRST YEAR
(Candidates admitted from 2019-2020 onwards – Paper IV)
(Candidates admitted from 2020-2021 onwards – Paper V)
PAPER IV & V – RADIATION SAFETY AND PROTECTION

Q.P. Code : 282504

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

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

1. Write in detail about Biological effects of non-ionizing radiation like ultrasound and magnetic fields.

2. Explain the different image quality tests in PET-CT.

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

1. What is Kerma?
2. Write brief on LD50.
3. What is Deterministic and stochastic effect of radiation?
4. Write short note on Fluorescence and Phosphorescence.
5. What is Dose Length Product (DLP)?
6. What is Dose area product in fluoroscopy and angiography?
7. Write short note on Planning consideration for mammography room.
8. Write short note on PCPNDT act.
9. Write brief on Radiation Protection in Mobile Radiography.
10. What is Leakage radiation?

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

[AHS 1023] **OCTOBER 2023** **Sub. Code: 2504**

M.Sc. RADIOGRAPHY AND IMAGING TECHNOLOGY
FIRST YEAR (From 2020-2021 onwards)
PAPER V – RADIATION SAFETY AND PROTECTION

Q.P. Code: 282504

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

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

1. What is Quality Assurance and Quality control? Write in detail about Quality Assurance in computed Tomography.

2. Write in detail about various different types of Radiation detectors and Measurements and explain about the Advantages and Disadvantages.

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

1. Explain about Primary Standard Dosimetry Laboratory [PSDL] and Secondary Standard Dosimetry Laboratory [SSDL].
2. Explain about the Free Air Ionization Chamber.
3. Write briefly on AERB.
4. Explain about Deterministic and Stochastic Effect of Radiation.
5. Explain about Sources of Radiation.
6. What is QA Phantom?
7. Write briefly on X-ray Beam Alignment Test.
8. Write short note on General Radiography Installation with Layout plan.
9. Explain about Cosmic Ray and Terrestrial Radiation.
10. What is eLORA?

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

[AHS 1024] **OCTOBER 2024** **Sub. Code: 2504**

M.Sc. RADIOGRAPHY AND IMAGING TECHNOLOGY
FIRST YEAR (From 2020-2021 onwards)
PAPER V – RADIATION SAFETY AND PROTECTION

Q.P. Code: 282504

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

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

1. Discuss in detail about radiation protection in Radiography and Fluoroscopy.

2. Explain about radiation detection and measurement devices.

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

1. Radiation dose limits for occupational and public.
2. Discuss about survey meter, area monitor.
3. What is Radiation quantities and measurement?
4. Explain direct and indirect action.
5. Discuss somatic and genetic effects of radiation.
6. What is effect of whole body and acute radiation?
7. Define exposure and chronic exposure-LD50.
8. What is CT dose index and CTDI?
9. Planning consideration of Radiography unit.
10. Role of Radiographer in planning and protection.

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

[AHS 0525] **MAY 2025** **Sub. Code: 2504**

M.Sc. RADIOGRAPHY AND IMAGING TECHNOLOGY
FIRST YEAR (From 2020-2021 onwards)
PAPER V – RADIATION SAFETY AND PROTECTION

Q.P. Code: 282504

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

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

1. Compare and contrast ionization chambers, proportional counters and Geiger-Muller (G.M.) counters in terms of their working principles, applications and limitations.

2. Define and discuss the significance of CT Dose Index (CTDI), Multiple Scan Average Dose (MSAD), Dose Length Product (DLP) and Dose Profile in CT imaging.

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

1. Radiation exposure risks in pregnancy and children.
2. Key planning considerations for setting up an X-ray unit.
3. Primary radiation vs. Scatter radiation vs. Leakage radiation.
4. Radiation safety in fluoroscopy and dose reduction techniques.
5. Mammography radiation protection strategies.
6. Dose Area Product (DAP) in fluoroscopy.
7. Chromosomal aberrations and their application in biological dosimetry.
8. National Radiological Protection Board (NRPB) and National Council on Radiation Protection and Measurements (NCRP) – their significance in radiation safety.
9. Occupational exposure limits and protection strategies for radiology staff.
10. Mandatory guidelines for CT Scan machine planning.

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

[AHS 1025] **OCTOBER 2025** **Sub. Code: 2504**

M.Sc. RADIOGRAPHY AND IMAGING TECHNOLOGY
FIRST YEAR (From 2020-2021 onwards)
PAPER V – RADIATION SAFETY AND PROTECTION

Q.P. Code: 282504

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

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

1. Explain in detail about the Biological Effects of Radiation.

2. Write in detail about patient protection in Diagnostic Radiology and what are the Responsibility of X-ray Technologist / Radiological Safety Officer (RSO)?

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

1. Write brief on the Geiger Muller counter.
2. What is eLORA?
3. Explain about CTDI and DLP.
4. What is leakage Radiation and how to control the leakage Radiation?
5. Explain about the Radiation survey meter with neat diagram.
6. Write short note on Radiation Exposure control.
7. Explain about Sources of Radiation.
8. Write short note on General Radiography Installation with layout plan.
9. Write short note on AERB.
10. Explain about Cosmic Ray and Terrestrial Radiation.

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