

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

[AHS 0222]

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

Sub. Code: 2505

**M.Sc. RADIOGRAPHY AND IMAGING TECHNOLOGY
FIRST YEAR**

(Candidates admitted from 2019-2020 onwards – Paper V)

(Candidates admitted from 2020-2021 onwards – Paper VI)

PAPER V & VI – MODERN RADIOLOGICAL AND IMAGING EQUIPMENT

Q.P. Code : 282505

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate notes on:

(2 x 20 = 40)

1. Discuss principle, equipment, procedure and recent advances in PET imaging.
2. Discuss in detail about MRCP principle, technique, sequences and clinical uses.

II. Write Short Notes on:

(10x6 = 60)

1. CT contrast reactions and its management.
2. Basic principle of MRI.
3. Patient preparation and procedure and post processing techniques in cerebral angiogram.
4. Principle and technique of dual energy CT.
5. HIFU – Principles and clinical uses.
6. DEXA Scan.
7. Digital Radiography.
8. Doppler.
9. Piezo electric effect.
10. MR Spectroscopy.

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

[AHS 0522]

MAY 2022

Sub. Code: 2505

**M.Sc. RADIOGRAPHY AND IMAGING TECHNOLOGY
FIRST YEAR**

(Candidates admitted from 2019-2020 onwards – Paper V)

(Candidates admitted from 2020-2021 onwards – Paper VI)

PAPER V & VI – MODERN RADIOLOGICAL AND IMAGING EQUIPMENT

Q.P. Code : 282505

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate notes on:

(2 x 20 = 40)

1. Discuss in detail about MRCP principle, technique, sequences and clinical uses.
2. Discuss principle, equipment and recent advances in Ultrasound.

II. Write Short Notes on:

(10x6 = 60)

1. Virtual bronchoscopy & colonoscopy.
2. Discuss about PACS.
3. Patient preparation and procedure and post processing techniques in peripheral angiogram.
4. DSA-equipment, principle and applications.
5. MRI pulse sequences.
6. Tomosynthesis – technique.
7. Contrast agents used in MRI.
8. CT artifacts.
9. Write about IITV and recent advance.
10. CT interventional procedures.

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

[AHS 1022]

OCTOBER 2022

Sub. Code: 2505

**M.Sc. RADIOGRAPHY AND IMAGING TECHNOLOGY
FIRST YEAR**

(Candidates admitted from 2019-2020 onwards – Paper V)

(Candidates admitted from 2020-2021 onwards – Paper VI)

PAPER V & VI – MODERN RADIOLOGICAL AND IMAGING EQUIPMENT

Q.P. Code : 282505

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate notes on:

(2 x 20 = 40)

1. Discuss principle, equipment, procedure and recent advances in gamma camera and spect imaging.
2. a) Discuss various non-contrast angiography.
b) Discuss in detail about various types of MRI PERFUSION sequences, techniques and application.

II. Write Short Notes on:

(10x6 = 60)

1. MRI Artifacts and remedies.
2. Explain MPR, MIP and MINIP.
3. Patient preparation and procedure and post processing techniques in pulmonary angiogram.
4. Types of modern X-Ray tubes.
5. MR spectroscopy principle.
6. CT Cisternogram.
7. Contrast Media.
8. Techniques of Ultrasound Elastography and its applications.
9. Technetium generator.
10. Ultrasound artifacts.

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

[AHS 0523]

MAY 2023

Sub. Code: 2505

**M.Sc. RADIOGRAPHY AND IMAGING TECHNOLOGY
FIRST YEAR**

(Candidates admitted from 2020-2021 onwards)

PAPER VI – MODERN RADIOLOGICAL AND IMAGING EQUIPMENT

Q.P. Code: 282505

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate notes on:

(2 x 20 = 40)

1. Describe the basis of BOLD imaging. Write its utility and limitations.
2. Principles and clinical applications of a) Spiral CT b) Dual energy CT.

II. Write Short Notes on:

(10x6 = 60)

1. Fusion imaging and PET-MR.
2. RET X-ray tubes.
3. Radiology Information System (RIS).
4. Tomographic ultrasound imaging.
5. Give an account on a) modern laser dry imagers b) Pressure injectors.
6. Flat panel detectors.
7. List the key components of MR elastography and its advantages over US elastography.
8. Principles and types of Bone densitometry.
9. Principle and applications of Radiofrequency ablation.
10. Fat suppression techniques in MR.

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

[AHS 1023]

OCTOBER 2023

Sub. Code: 2505

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FIRST YEAR (From 2020-2021 onwards)
PAPER VI – MODERN RADIOLOGICAL AND IMAGING EQUIPMENT**

Q.P. Code: 282505

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate notes on:

(2 x 20 = 40)

1. Describe the physical principles of CR and DR. Discuss in detail their advantages and disadvantages.
2. What do you understand by perfusion imaging? Describe briefly CT and MR perfusion imaging techniques and applications.

II. Write Short Notes on:

(10x6 = 60)

1. Advantages and disadvantages of 3T MRI over 1.5T MRI.
2. Multi-slice CT technology.
3. Artificial intelligence in radiology.
4. Tissue harmonic imaging.
5. Full field digital mammography.
6. Zero lead aprons and advances in lead apron technology.
7. 3D and 4D ultrasound.
8. Discuss principle and equipment of Cine Fluoroscopy.
9. a) Portable radiography b) Mobile CT scanner.
10. Ventilation perfusion scanning of lung.

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

[AHS 1024]

OCTOBER 2024

Sub. Code: 2505

**M.Sc. RADIOGRAPHY AND IMAGING TECHNOLOGY
FIRST YEAR (From 2020-2021 onwards)
PAPER VI – MODERN RADIOLOGICAL AND IMAGING EQUIPMENT**

Q.P. Code: 282505

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2x20=40)

1. Discuss in detail about image quality, artifacts and methods to control these artifacts in MRI imaging.
2. Discuss in detail about the principles of Doppler ultrasound and various forms of doppler ultrasound in use.

II. Write Short Notes on:

(10x6=60)

1. Digital mammography.
2. Cine radiography.
3. Spectral CT technology.
4. DSA.
5. Image Reconstruction in CT scan.
6. Stitch Radiography.
7. Biological effects of MRI.
8. CT Angiography.
9. Modern X-ray tubes.
10. DEXA scan.

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

[AHS 0525]

MAY 2025

Sub. Code: 2505

**M.Sc. RADIOGRAPHY AND IMAGING TECHNOLOGY
FIRST YEAR (From 2020-2021 onwards)
PAPER VI – MODERN RADIOLOGICAL AND IMAGING EQUIPMENT**

Q.P. Code: 282505

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(2x20= 40)

1. Discuss the principle, equipment, procedure and Recent advances in Gamma camera and SPECT Imaging.
2. Discuss in detail about
 - (i) Digital Radiography systems.
 - (ii) Image quality in Digital Radiography systems.
 - (iii) Artifacts in Digital Radiography systems.

II. Write Short Notes on:

(10x6 = 60)

1. Stereotactic biopsy.
2. Dexa scan.
3. Doppler ultrasound.
4. Imaging sequences in MRI scan.
5. Charged couple devices.
6. Detectors in CT scan.
7. Stieh Radiography.
8. High frequency X-ray generators.
9. Automatic exposure control.
10. Principles of PET scan.

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

[AHS 1025]

OCTOBER 2025

Sub. Code: 2505

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PAPER VI – MODERN RADIOLOGICAL AND IMAGING EQUIPMENT**

Q.P. Code: 282505

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate notes on:

(2 x 20 = 40)

1. Discuss (i) Principles of Ultrasound and various interactions of Ultrasound with matter.
(ii) Artifacts in Ultrasound Imaging.
2. Discuss (i) reconstruction of CT images.
(ii) quality of CT images and artifacts in CT images.

II. Write Short Notes on:

(10x6 = 60)

1. Technetium generators.
2. Principles of PET scan.
3. T2 Relaxometry
4. Principles of Tomography.
5. MRI Imaging sequences.
6. Generations of CT scan.
7. Volumetric computed Tomography.
8. MRI contrast medium.
9. Tomosynthesis – Technique.
10. Radiation protection in fluoroscopy.
