

[LH 0415]

OCTOBER 2015

Sub. Code: 3602

DIPLOMA IN RADIOLOGY & IMAGING TECHNOLOGY
(Regulation for candidates admitted from 2014-2015 session onwards)
PAPER II – RADIO DIAGNOSTIC EQUIPMENTS – INSTRUMENTATION,
RADIATION, SAFETY & QUALITY CONTROL

Q.P. Code : 363602

Time : Three hours

Maximum : 100 marks

I. Elaborate on:

(2 x 20 = 40)

1. Explain MRI Instrumentation in detail.
2. Explain planning of X-ray installation as per AERB guidelines.

II. Write notes on:

(10 x 6 = 60)

1. Describe Kilo Voltage (KV) control circuit in X-ray production.
2. Write note on Exposure Timers and its types.
3. Discuss about Automatic Exposure control.
4. Discuss solid state CT detector.
5. Discuss about MRI safety and shielding.
6. Write a short note on PET – CT Artifacts.
7. Write about the responsibilities of RSO according to Radiation Protection Rules.
8. Define Use factor and Occupancy Factor.
9. Write about types of Packages for Radioactive Sources.
10. Explain Congruence of Radiation & Optical field & Test for Central Beam alignment in X-ray Quality Assurance.

[LI 0416]

APRIL 2016

Sub. Code: 3602

**DIPLOMA IN RADIOLOGY & IMAGING TECHNOLOGY
PAPER II – RADIO DIAGNOSTIC EQUIPMENTS – INSTRUMENTATION,
RADIATION, SAFETY & QUALITY CONTROL**

Q.P. Code : 363602

Time : Three hours

Maximum : 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Explain CT generations with Diagram.
2. Explain effect of Time, Distance & Shielding in minimizing radiation exposure.

II. Write notes on:

(10 x 6 = 60)

1. Describe Filament circuit in X-ray Production.
2. Write note on Flat Panel Detectors and its advantages.
3. Write a short note on CT Artifacts.
4. Discuss types of magnets in MRI Instrumentation.
5. Explain the parts of Ultrasound Transducer.
6. Explain Technetium generator.
7. Write about the Responsibilities of Employer according to Radiation Protection Rules.
8. Define Equivalent Dose and Effective Dose.
9. Write down the guidelines on usage of TLD badges.
10. Write short note on philosophy of Radiation Protection.

[LJ 1016]

OCTOBER 2016

Sub. Code: 3602

**P.G. DIPLOMA IN RADIOLOGY & IMAGING TECHNOLOGY EXAMS
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Q.P. Code : 363602

Time : Three hours

Maximum : 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Discuss in detail the working and construction of rotating anode X-ray tube. Write a note about the advantages of rotating anode over stationary anode X-ray tube.
2. Write a short note on Tomosynthesis. Explain the working principle of a Mammography system.

II. Write notes on:

(10 x 6 = 60)

1. Image intensifier.
2. Reasons for grid cut-off.
3. Multi detector CT scanner.
4. Electronic timer.
5. Spin echo and inversion recovery sequence.
6. Indirect flat panel detectors.
7. Doppler ultrasound and Doppler shift.
8. Automatic exposure control.
9. Gamma camera.
10. Principles of Radiation safety.

[LL 1017]

OCTOBER 2017

Sub. Code: 3602

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Q.P. Code : 363602

Time : Three hours

Maximum : 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Explain MRI Instrumentation in detail.
2. Explain CT Scanner Quality Assurance.

II. Write notes on:

(10 x 6 = 60)

1. Write a note on Auto Transformer.
2. Write note on MRI Artifacts.
3. Write note on Automatic Exposure Control.
4. Write note on CR reader.
5. Discuss Xenon gas CT Detector.
6. Discuss CTDI and DLP in CT Scanner unit.
7. Write responsibilities of employer in RPR 2004.
8. Discuss direct and indirect action of Radiation in cells.
9. Write about RF Coils in MRI.
10. Discuss Stochastic effects of Radiation.

[LM 0518]

MAY 2018

Sub. Code: 3602

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Q.P. Code : 363602

Time : Three hours

Maximum : 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Explain Fluoroscopy equipment with image intensifier in detail.
2. Elaborate X-ray Quality Assurance with all relevant tests.

II. Write notes on:

(10 x 6 = 60)

1. Write a note on Full wave rectifier.
2. Write note on Ultrasound Artifacts.
3. Write note on Automatic Brightness Control.
4. Write note on Mammography Tube Design.
5. Discuss Direct Solid State Detectors in DR X-ray Unit.
6. Discuss about Biological effects of Ultrasound.
7. Write Responsibilities of RSO in RPR 2004.
8. Discuss about Ten day rule and its present status.
9. Discuss about MRI Safety.
10. Discuss Somatic and Hereditary effects of Radiation.

[LN 1018]

OCTOBER 2018

Sub. Code: 3602

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Q.P. Code : 363602

Time : Three hours

Maximum : 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Production of X-ray with diagram.
2. Describe the interaction of gamma radiation with matter.

II. Write notes on:

(10 x 6 = 60)

1. Types of magnets in MRI.
2. Gas filled detectors.
3. Structure of atom.
4. Describe any three artifacts and their remedy in CT.
5. Characteristic curve of X-ray film.
6. Explain the procedure of loopogram.
7. Radiopharmaceuticals used for lung and cardiac studies.
8. Different types of transducer.
9. Film screen contact test.
10. Cones and diaphragms.

[LP 1019]

OCTOBER 2019

Sub. Code: 3602

**P.G. DIPLOMA IN RADIOLOGY & IMAGING TECHNOLOGY EXAMS
PAPER II – RADIO DIAGNOSTIC EQUIPMENTS – INSTRUMENTATION,
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Q.P. Code : 363602

Time : Three hours

Maximum : 100 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Write in detail about artifacts in CT and measures to reduce them.
2. Computer Radiography Vs Digital radiography. Explain the pros and cons.

II. Write notes on:

(10 x 6 = 60)

1. MUGA Scan.
2. T1WI vs T2WI – Principle and clinical significance.
3. Image intensifier.
4. MR Spectroscopy.
5. Sequences for MR imaging in stroke patients.
6. Barium enema procedure.
7. Summary of AERB recommendations on radiation dose limits.
8. Orthopantammogram.
9. Patient preparation, procedure and post processing of images in Pulmonary angiogram.
10. Flat panel detector.

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

[AHS 0321]

MARCH 2021

Sub. Code: 3602

(OCTOBER 2020 EXAM SESSION)

POST GRADUATE DIPLOMA IN RADIOLOGY & IMAGING TECHNOLOGY

(From 2014-2015 onwards)

**PAPER II – RADIO DIAGNOSTIC EQUIPMENTS – INSTRUMENTATION, RADIATION, SAFETY AND
QUALITY CONTROL**

Q.P. Code : 363602

Time : Three hours

Answer ALL Questions

Maximum : 100 Marks

I. Elaborate notes on:

(2 x 20 = 40)

1. Production of X-rays with diagrammatic representation.
2. Factors controlling CT image quality. Enumerate CT artefacts.

II. Write Short Notes on:

(10x6 = 60)

1. Collimators
2. Pocket dosimeter
3. Intensifying screens
4. Digital subtraction angiography [DSA]
5. Helical CT
6. Principle of time, distance & shielding in radiation protection
7. Diffusion weighted imaging in MRI
8. Guidelines for establishing nuclear medicine facility
9. Characteristic curve of X-ray film
10. Types of ultrasound transducers

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

[AHS 0921]

**SEPTEMBER 2021
(MAY 2021 EXAM SESSION)**

Sub. Code: 3602

**POST GRADUATE DIPLOMA IN RADIOLOGY & IMAGING TECHNOLOGY
(From 2014-2015 onwards)**

**PAPER II – RADIO DIAGNOSTIC EQUIPMENTS – INSTRUMENTATION, RADIATION, SAFETY AND
QUALITY CONTROL**

Q.P. Code : 363602

Time : Three hours

Answer ALL Questions

Maximum : 100 Marks

I. Elaborate notes on:

(2 x 20 = 40)

1. Principles of radiation protection & dose measurements limits recommended by AERB.
2. Personal monitoring devices & measurements.

II. Write Short Notes on:

(10x6 = 60)

1. Types of MRI magnets.
2. Types of transducers.
3. Types of modes in ultrasound.
4. Radiation measurement units, quantities.
5. TLD.
6. Area monitoring devices.
7. Quality assurance test in mammogram.
8. MR angiography.
9. T1 vs T2.
10. Pocket Dosimeter.
