

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

[LR 1220]

**DECEMBER 2020
(AUGUST 2020 EXAM SESSION)**

Sub. Code: 1434

**DIPLOMA IN RADIOGRAPHY AND IMAGING TECHNOLOGY
SECOND YEAR – (Regulation from 2018-2019)
PAPER IV – QUALITY CONTROL IN RADIOLOGY AND RADIATION SAFETY
*Q.P. Code: 841434***

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Define Quality Assurance. Explain Q A procedure for Beam Alignment and focal spot test in Radiography Units.
2. Give a detailed account of Biological Effects of Radiation.
3. Explain about Natural and Artificial Radioactivity with example.

II. Write notes on:

(10 x 5 = 50)

1. What are the guidelines for using Personnel Monitoring Badge?
2. Atomic Energy Regulatory Board recommendations for Radiation Protection.
3. Dose limit for Radiation Workers.
4. Explain about the Painting and Flooring of an X-Ray dark room.
5. Methods to reduce patient radiation dose in Diagnostic Radiology.
6. Pocket Dosimeter.
7. Output consistency checking in Radiography unit.
8. Tube Housing Leakage.
9. Planning of X-Ray unit room in Diagnostic Radiology Department.
10. Central Beam Alignment test for Radiography unit.

III. Short answers on:

(10 x 2 = 20)

1. What is ALARA?
2. Define Absorbed Dose. Give its SI unit.
3. Effect of kV in energy of X ray output.
4. Half life of Radioactive materials.
5. Write the disadvantages of Film Badges as Personnel Monitoring Devices.
6. Draw the X-Ray Radiation warning sign.
7. Half Value Layer.
8. What is Sievert?
9. Write abbreviation for NABH and ICRP.
10. What are the minimum area requirements for CT scan and Cath lab room

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

[AHS 0122]

JANUARY 2022

Sub. Code: 1434

(FEBRUARY 2021 & AUGUST 2021 EXAM SESSION)

DIPLOMA IN RADIOGRAPHY AND IMAGING TECHNOLOGY

SECOND YEAR – (Regulation from 2018-2019)

PAPER IV – QUALITY CONTROL IN RADIOLOGY AND RADIATION SAFETY

Q.P. Code: 841434

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Explain the planning of 300mA unit X-Ray room with suitable diagram.
2. How can Radiation be controlled with changes in time, distance and shielding?
3. Explain Stochastic and deterministic effects of Radiation in detail

II. Write notes on:

(10 x 5 = 50)

1. Radiation Survey Meter and its uses.
2. Field Concurrence Test in Radiography.
3. Brief about the Dark Room and its Functions.
4. AERB Occupational workers dose limits.
5. Equivalent dose and Effective dose.
6. Define ALARA and its Importance.
7. Working principle of Pocket Dosimeter.
8. How to maintain Quality Control according to NABH?
9. List the Radiation safety Instruments, devices and their uses in Diagnostic Radiology.
10. TLD Dosimeter on Personnel Monitoring.

III. Short answers on:

(10 x 2 = 20)

1. What is Lead Equivalence?
2. Define on Roentgen and Give its unit.
3. AERB recommended permissible dose limit for General Public.
4. Give name of two Shielding materials used in Radiography.
5. What is Genetic Effects?
6. Define Half Value Layer.
7. What is aim of Radiation protection?
8. Define one Gray.
9. Define filters in Radiography.
10. Safe Light used in Dark rooms and its Advantages.

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

[AHS 0922]

SEPTEMBER 2022

Sub. Code: 1434

(FEBRUARY 2022 & AUGUST 2022 EXAM SESSIONS)

DIPLOMA IN RADIOGRAPHY AND IMAGING TECHNOLOGY

SECOND YEAR – (Regulation from 2018-2019)

PAPER IV – QUALITY CONTROL IN RADIOLOGY AND RADIATION SAFETY

Q.P. Code: 841434

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Explain in detail about Thermoluminescent dosimeter – Construction, working and dose measurement.
2. Describe in detail about the radiation safety instruments.
3. Explain the planning of X-ray room with suitable diagram and evaluate work load.

II. Write notes on:

(10 x 5 = 50)

1. Explain the construction of dark room with neat sketch.
2. Define Equivalent dose, Effective dose and Committed dose with its units.
3. Write a note on permissible dose limits for public and radiation worker according to ICRP.
4. Explain about tube housing leakage test and central beam alignment test for radiography unit.
5. Write a note on basic methods of radiation safety.
6. Discuss the principle, construction and working of pocket dosimeter.
7. Write note on construction and guidelines to use film badge.
8. Discuss about shielding materials used in radiation control.
9. Write about radiation effect on embryo.
10. Differentiate between Somatic and Genetic effect.

III. Short answers on:

(10 x 2 = 20)

1. What is exposure and its units?
2. Define kVp and its importance.
3. What is use factor?
4. Draw the X-ray warning symbol and label it.
5. Define half life.
6. Define KERMA with its unit.
7. Give a note on ten day rule.
8. What is the aim of radiation protection?
9. Define ALARA principle.
10. What is gantry tilt assessment in CT?

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

[AHS 0423]

APRIL 2023

Sub. Code: 1434

DIPLOMA IN RADIOGRAPHY AND IMAGING TECHNOLOGY
SECOND YEAR – (Regulation 2018-2019 onwards)
PAPER IV – QUALITY CONTROL IN RADIOLOGY AND RADIATION SAFETY
Q.P. Code: 841434

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Discuss in detail about the Biological effects of Radiation.
2. Describe in detail about the NABH Quality Control Procedure.
3. Explain the role of Time, Distance, Shielding in Radiation Control.

II. Write notes on:

(10 x 5 = 50)

1. Explain the sources of Background Ionizing Radiation.
2. Write a note on somatic effects and Hereditary effects.
3. How to reduce patient dose in X-ray studies in paediatrics?
4. Explain about the benefits of QA procedures in Radiology Department.
5. Explain the principles of Radiation protection.
6. Discuss the QA procedure – Consistency of X-ray output and linearity of mA test.
7. Write note on AERB recommendations for Radiation protection.
8. Discuss about planning of X-ray unit room in diagnostic Radiology Department.
9. Write about TLD personnel monitoring device.
10. Write about Stochastic effect with example.

III. Short answers on:

(10 x 2 = 20)

1. What is Lead equivalence?
2. Define mA.
3. What is Excitation and Ionization?
4. What are the uses of Gonad shield?
5. Define absorbed dose and its unit.
6. Define HVL and TVL.
7. Give a note on Time Linearity Test.
8. What are the three principles of Radiation protection?
9. Write the dose limit for (1) Students/Trainees (2) Public (3) Radiation Worker.
10. What are the shielding materials used in Radiology?

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[AHS 1123]

NOVEMBER 2023

Sub. Code: 1434

DIPLOMA IN RADIOGRAPHY AND IMAGING TECHNOLOGY
SECOND YEAR – (Regulation 2018-2019 onwards)
PAPER IV – QUALITY CONTROL IN RADIOLOGY AND RADIATION SAFETY
Q.P. Code: 841434

Time: Three Hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Quality Assurance for Computed Tomography.
2. How does time, distance and shielding play a role in Radiation Control?
3. Planning of X-ray Room with suitable diagram and evaluate work load.

II. Write notes on:

(10 x 5 = 50)

1. Shielding materials in Radiation control.
2. Tube housing leakage.
3. Measurement of CT dose index.
4. Cautious steps taken in a Radio Diagnostic Department.
5. Geiger Muller Counter.
6. Film Badge and uses.
7. Natural and man-made sources of Radiation.
8. Safety specifications for diagnostic X-ray unit in General Radiography.
9. Commonly used Radiation Safety Instruments.
10. Importance of Secondary Barriers.

III. Short answers on:

(10 x 2 = 20)

1. ALARA.
2. Define Filters.
3. Uses of Thermo Luminescence Dosimeter.
4. Define mAs and its importance.
5. What is Lead Equivalence?
6. What is Roentgen and its units?
7. List any two Genetic Effects.
8. Safe Light and its advantages.
9. Swipe test.
10. Give two examples of Shielding.
