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

[AHS 0122] JANUARY 2022 Sub. Code: 2314
(OCTOBER 2021 EXAM SESSION)

M.Sc. NUCLEAR MEDICINE TECHNOLOGY
SECOND YEAR (From 2019-2020 onwards)
PAPER IV – QUALITY CONTROL OF NUCLEAR MEDICINE EQUIPMENT
Q.P. Code : 282314

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

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

1. Enumerate the importance of quality assurance of nuclear medicine instruments. List the quality assurance tests carried out for planar gamma camera.

2. Enumerate the various acceptance tests during installation of PET CT scanner. What are the routine quality assurance procedures for PET CT scanners?

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

1. What is the Isotope Calibrator's linearity? Mention how important it is in routine radiopharmaceutical dose measurements. What are the various ways, and how do you go about determining linearity?
2. In a SPECT gamma camera, what is the center of rotation (COR)? How do you go about correcting the COR?
3. What is the difference between pincushion and barrel distortion? How do you correct it?
4. What is the Jaszczak SPECT Phantom and how does it help in the SPECT gamma camera quality assurance?
5. Explain why the iso-response curve is important for the flat field collimator used in thyroid uptake probes.
6. Give a brief overview of the various Recliner Scanner acceptance and reference tests.
7. What is the difference between counting device’s precision and accuracy? How do you determine the accuracy?
8. What you understand by energy linearity of well counter? What is the procedure for performing an energy linearity test?
9. What exactly is the sample volume effect? Why is it significant? Write down the procedure to find sample volume effect.
10. What you understand by preventive maintenance? Describe the different preventative maintenance practices followed in nuclear medicine.

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

[AHS 1022] **OCTOBER 2022** **Sub. Code: 2314**

M.Sc. NUCLEAR MEDICINE TECHNOLOGY
SECOND YEAR
(Candidates admitted from 2019-2020 & 2020-2021 onwards)
PAPER IV– QUALITY CONTROL OF NUCLEAR MEDICINE EQUIPMENT

Q. P. Code: 282314

Time: Three hours **Maximum : 100 Marks**

Answer ALL Questions

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

1. The various NEMA recommended test for a SPECTCT gamma camera at the time of installation.

2. Elaborate on the frequency and importance of QC of a SPECTCT system.

II. Write notes on: **(10 x 6 = 60)**

1. PET Normalization procedure.
2. Uniformity of gamma camera.
3. Linearity of Dose calibrator.
4. Iso-Response curve of a thyroid probe system.
5. Procedures involved in the preventive maintenance of a gamma camera.
6. Collimator Integrity test.
7. Streak artifact in PETCT.
8. Curvilinear cold artifact on PET image.
9. SPECT CT alignment test.
10. Geometric positioning and movement test of CT on a PETCT system.

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

[AHS 1023] **OCTOBER 2023** **Sub. Code: 2314**

M.Sc. NUCLEAR MEDICINE TECHNOLOGY
SECOND YEAR (From 2020-2021 onwards)
PAPER IV – QUALITY CONTROL OF NUCLEAR MEDICINE EQUIPMENT

Q. P. Code: 282314

Time: Three hours **Maximum: 100 Marks**

Answer ALL Questions

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

1. Explain in details about operational check of scintillation camera.

2. Describe about film processing and handling in nuclear medicine department.

II. Write notes on: **(10 x 6 = 60)**

1. Write about NEMA body phantom for quality check of PET scan.
2. Explain about daily quality tests of rectilinear scanner.
3. Write about purpose of static phantom used in nuclear medicine lab.
4. Write about fog and latitude.
5. Write about daily quality control check of automatic film processor.
6. Write about quality control test of sensitivity.
7. Explain the quality control test of linearity of energy response.
8. Write about daily quality check in dose calibrator.
9. Briefly explain operational check of gamma camera.
10. Write about weekly quality control tests of PET scan.

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