

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

[AHS 0321]

**MARCH 2021**

**Sub. Code: 2306**

**(OCTOBER 2020 EXAM SESSION)**

**M.Sc. NUCLEAR MEDICINE TECHNOLOGY**

**FIRST YEAR (From 2019-2020 onwards)**

**PAPER VI – NUCLEAR MEDICINE INSTRUMENTATION - I**

***Q.P. Code : 282306***

**Time: Three hours**

**Answer ALL Questions**

**Maximum: 100 Marks**

**I. Elaborate notes on:**

**(2 x 20 = 40)**

1. Discuss the principles involved in SPECT and PET Image Reconstruction and the use of Filters to remove Noise from the SPECT and PET Images.
2. Explain the fundamental operation of a dedicated PET Scanner, its design and how it acquires and stores data.

**II. Write Short Notes on:**

**(10x6 = 60)**

1. Pulse Height Analyser and its use as energy discriminator.
2. Concept of SPECT Imaging and various SPECT Acquisition modes.
3. Iterative Reconstruction Algorithm and 3D Image Display.
4. Image Quality and Artefacts in SPECT Imaging.
5. Nyquist frequency and Cut off frequency: Effect on Imaging smoothing and noise.
6. List of Detector Crystals that can be used in PET Imaging and their salient features.
7. Time of Flight Scanners.
8. Decommissioning of a Nuclear Medicine and Cyclotron facility.
9. Fundamental Operation of a PET CT.
10. Quality Management Systems in Nuclear Medicine.

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