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

[MD 1224] **DECEMBER 2024** **Sub. Code: 4072**

M.D. DEGREE EXAMINATION

NUCLEAR MEDICINE

PAPER IV – RECENT ADVANCES IN NUCLEAR MEDICINE

Q.P. Code: 204072

Time : Three Hours **Maximum : 100 Marks**

I. Elaborate on: **(2 x 15 = 30)**

1. Intelligent Imaging in Nuclear Medicine.
2. Nuclear Medicine applications in Gynecological malignancies.

II. Write notes on: **(10 x 7 = 70)**

1. Role of F18 FES PET – CT in oncology.
2. Clinical trials in CRPC pertaining to nuclear medicine.
3. PET-MRI – basics.
4. Nuclear Imaging for Paragangliomas.
5. Total body PET.
6. Novel PET tracers in Neurology.
7. Radioimmunotherapy in Lymphomas.
8. Ga68 RGD PET CT imaging.
9. Molecular imaging in atherosclerosis.
10. Guided robotic surgery and molecular imaging.

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

[MD 1025] OCTOBER 2025 Sub. Code: 4072

M.D. DEGREE EXAMINATION

NUCLEAR MEDICINE

PAPER IV – RECENT ADVANCES IN NUCLEAR MEDICINE

Q.P. Code: 204072

Time : Three Hours **Maximum : 100 Marks**

I. Elaborate on: **(2 x 15 = 30)**

1. Discuss the concept of theranostics in prostate cancer. Elaborate on the role of PSMA PET-CT in selecting patients and monitoring response of Lutetium-177-PSMA therapy.

2. Compare FDG and Non-FDG PET tracers in oncological imaging. Highlight their relative advantages, limitations and specific clinical indications.

II. Write notes on: **(10 x 7 = 70)**

1. Current clinical applications of PET-MRI in neurology, including its role in epilepsy and dementia and its advantages over PET-CT.

2. Radionuclide therapy for bone metastases – compare the efficacy and safety profiles of Strontium-89, samarium-153 and Radium-223 in pain palliation and survival benefit.

3. Use of Iodine-131 MIBG for myeloablative therapy – Indications, protocol and precautions.

4. Mechanism of action and dosimetry considerations in Yttrium-90 lbritumomab tiuxetan radio immunotherapy for lymphoma.

5. Applications of artificial intelligence (AI) in nuclear medicine – Role in improving SPECT image reconstruction and reducing acquisition time.

6. Overview and clinical relevance of the RADIANT-1, RADIANT-2, RADIANT-3 and RADIANT-4 trials in neuroendocrine tumor management.

7. Lutetium-177 DOTATATE therapy – Patient preparation, dosing protocol, monitoring and management of adverse effects.

8. Hypoxia imaging in oncology – Role of F-MISO Pet in radiotherapy planning, particularly in head and neck malignancies.

9. Yttirtum-90 radioembolization in liver tumors – Patient selection, administration and follow-up.

10. Overview of Copper-64 and Gallium-68 labelled compounds in research and clinical practice.

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