[LS 121] NOVEMBER 2020 **Sub. Code: 3017**

(OCTOBER 2020 SESSION)

M.D. DEGREE EXAMINATION

BRANCH XXIV – NUCLEAR MEDICINE

PAPER II – RADIOPHARMACY, RADIOBIOLOGY, QUALITY ASSURANCE IN MEDICAL IMAGING, RADIATION PROTECTION RADIATION SAFETY INCLUDING NATIONAL AND INTERNATIONAL REGULATORY NORMS

Q.P. Code: 203017

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

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

1. Biological effects of ionising radiation
2. Non-imaging Tests in Nuclear Medicine

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

1. NEMA for SPECT
2. Hypoxia and tumour progression
3. DNA mediated gene transfer
4. Iodination
5. QC of radiopharmaceutical
6. Radiation weighting factors
7. Dose limits ICRP 103
8. GFR estimation using plasma sample method
9. eLORA
10. PETCT layout as per AERB guidelines

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[MD 0721] JULY 2021 **Sub. Code: 3017**

(MAY 2021 SESSION)

M.D. DEGREE EXAMINATION

BRANCH XXIV – NUCLEAR MEDICINE

PAPER II – RADIOPHARMACY, RADIOBIOLOGY, QUALITY ASSURANCE IN MEDICAL IMAGING, RADIATION PROTECTION RADIATION SAFETY INCLUDING NATIONAL AND INTERNATIONAL REGULATORY NORMS

Q.P. Code: 203017

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

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

1. Commonly used radiopharmaceuticals for neuroendocrine tumours.
2. Various tumour specific tracers for SPECT imaging.

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

1. Occupational hazards from radionuclides.
2. Maximum permissible limits of radiation exposure.
3. Mechanisms of uptake and localization of SPECT tracers.
4. Quality control procedures for PET radiopharmaceuticals.
5. Non-FDG tracers and their applications.
6. Applications of internal dosimetry.
7. Stochastic effects of radiation exposure.
8. 68 Ga PSMA.
9. Beta emitting radionuclides for therapy.
10. Sublethal damage from radiation.

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

[MD 0522] **MAY 2022** **Sub. Code: 3017**

M.D. DEGREE EXAMINATION

BRANCH XXIV – NUCLEAR MEDICINE

PAPER II – RADIOPHARMACY, RADIOBIOLOGY, QUALITY ASSURANCE IN MEDICAL IMAGING, RADIATION PROTECTION RADIATION SAFETY INCLUDING NATIONAL AND INTERNATIONAL REGULATORY NORMS

Q.P. Code: 203017

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

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

1. Commonly used radiopharmaceuticals for myocardial perfusion studies.
2. Various tumour specific tracers for PET imaging.

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

1. What is ALARA principle?
2. Accidental exposure to radionuclides.
3. Permissible limits of radiation exposure in occupation workers.
4. Docker dosimeter and film leadge.
5. Various traces used in Meletas Scientigrathy.
6. SPECT tracers and their applications.
7. Methods of internal dosimetry.
8. Stochastic and deterministic effects of coising radiation.
9. 68 Ga DOTATATE.
10. Alpha emitting radionuclides for therapy.

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

[MD 0723] JULY 2023 Sub. Code: 3017

(MAY 2023 EXAM SESSION)

M.D. DEGREE EXAMINATION

BRANCH XXIV – NUCLEAR MEDICINE

PAPER II – RADIOPHARMACY, RADIOBIOLOGY, QUALITY ASSURANCE IN MEDICAL IMAGING, RADIATION PROTECTION RADIATION SAFETY INCLUDING NATIONAL AND INTERNATIONAL REGULATORY NORMS

Q.P. Code: 203017

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

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

1. Enumerate the acceptance testes during installation of Gamma camera.

2. Explain the radionuclide separation techniques.

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

1. a) Signal noise ratio.
   b) PLES phantom.

2. a) CTD I.
   b) Extrinsic flood.

3. a) Test for spatial resolution of point source in PET scan.
   b) COR calibration in H and L mode.

4. a) Write a test for precision and linearity for radiation survey meter.
   b) Photo peak in SPECT scan.

5. a) FWHM and pixel size selection.
   b) Gamma zone monitor.

6. a) Linogram and sonogram.
   b) External factors affecting Gamma camera performance.

7. a) Coordinate covalent bond.
   b) Chemical structure of DTPA.

8. a) Flood check, linearity, uniformity and dead time Resolution for Gamma Camera.
   b) Various bone imaging tracers.

9. a) Routine daily check of dose calibrator, and uptake probe.
   b) Molly breakthrough test.

10. a) Modulation transfer function.
    b) Pulse height spectrometry.

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