FINAL EXAM
DECEMBER 2011

NATIONAL BOARD OF EXAMINATIONS

NUCLEAR MEDICINE

PAPER- I

Time : 3 hours **NM/D/11/24/I**
Max. Marks : 100

Attempt all questions in order.
Each question carries 10 marks.

Write short notes on:

1.	Artifacts in SPECT & PET, their significance and how do you resolve the problems arising because of artifacts.	10
2.	Derive relationship between decay constant and half life.	10
3.	What is SUV? Discuss methods of calculation, significance and factors affecting SUV.	10
4.	Why is reconstruction important? Describe one in detail besides enumerating all.	10
5.	How do you integrate "Imaging Divisions" through computers comprehensively for effective reporting?	10
6.	Radioactive waste disposal: classify, elaborate upon methods of disposal with their limits.	10
7.	a. Thyroid probe b. T.O.F.	5+5
8.	Quality control in a RIA set up.	10
9.	a. Autoradiography b. Personal monitoring	5+5
10.	Stages in the development of radiation injury and their effect	10

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PAPER- II

Time : 3 hours **NM/D/11/24/II**
Max. Marks : 100

Attempt all questions in order.
Each question carries 10 marks.

Write short notes on:

1. Elaborate upon the factors determining the amount of radionuclide produced in a reactor or accelerator. 10

2. a. List the ideal properties of a radionuclide to be used for diagnostic purpose. 5+5
   b. Possibility of replacing I^{123} with I^{124}.

3. Different isotopes of iodine- Enumerate and give one example of each. 10

4. Elaborate upon different routes of administration and methods of localization. 10

5. Recent advances in radionuclide therapy. 10

6. a. Radioactive equilibrium 5+5
   b. Importance of carrier free radionuclides? What do you mean by carrier free?

7. Elaborate upon radio-protectors and radio-sensitizers with examples and applications. 10

8. a. INES 5+5
   b. Dose limits prescribed by AERB/ICRP

9. Quality control of radiopharmaceuticals. 10

10. Elaborate the Significance of Non-FDG pharmaceuticals. 10

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PAPER- III

Time : 3 hours
Max. Marks : 100

NM/D/11/24/III

Attempt all questions in order.
Each question carries 10 marks.

Write short notes on:

1. Thyroiditis - their evaluation and management. 10

2. a. Modified PIOPED
   b. Indications of SPECT-CT scanning in abdominal imaging 5+5

3. Tc^{99m} colloid is a multipurpose radionuclide. Justify. 10

4. What are the limitations of Planar Bone Scan? How to overcome these? 10

5. a. Dual time point imaging
   b. Drug interactions in uptake of radio-iodine in thyroid gland. 5+5

6. RECIST to PERCIST- an evolving consideration. Justify. 10

7. Algorithmic evaluation of CAD through radionuclide technique. 10

8. Clinical applications of Non-FDG scintigraphy. 10

9. Nuclear Medicine in management of epilepsy. 10

10. Significance of interventions in Nuclear Medicine. 10

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NUCLEAR MEDICINE

PAPER- IV

Time : 3 hours
Max. Marks : 100

NM/D/11/24/IV

Attempt all questions in order.
Each question carries 10 marks.
Write short notes on:

1.	PET-MR, various configurations - Is it a reality? Status as of now.	10
2.	a. FDG PET vs 11C Pittsburgh compound in Alzheimer's. b. SPM.	5+5
3.	Role of "Hybrid" technology in medical drug research through small animals.	10
4.	a. PEM – merits and demerits b. Metabolic biopsy	5+5
5.	a. Hand held gamma probe b. PMT-circular vs hexagonal	5+5
6.	NaI symporter and its role in Nuclear Medicine.	10
7.	What do you infer by re-differentiation therapy? Describe various approaches and agents.	10
8.	a. Phantoms and its use for CT tube calibration b. Solid state detectors	5+5
9.	a. Radiation during pregnancy Vs fetal abnormality. b. Latest recommendation of ICRP as applicable to Nuclear Medicine.	5+5
10.	What are SISCOM and SISCOS? Describe how they help in management of epilepsy.	10

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