FINAL EXAM
DECEMBER 2012

NATIONAL BOARD OF EXAMINATIONS

NUCLEAR MEDICINE

PAPER – I

Time : 3 hours
Max. Marks : 100

NM/D/12/24/I

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

Write short notes on:

1. Significance of collimation, type of collimators and applications in Nuclear Medicine procedures. 10

2. Transportation of Radio-isotope: Regulatory clearances required, various packages and importance of transport index. 10

3. List advantages of image archiving and communication systems & utility in Nuclear Medicine. 10

4. a) Attenuation correction.
   b) Scatter correction. 5X2

5. Describe routine quality control procedures of a gamma camera and describe expected results in each case. 10

6. Classify radioactive waste in Nuclear Medicine. How do you handle them? Elaborate upon them with limits. How you manage gaseous waste from a PET radio pharmacy. 10

7. Interaction of radiation with matter. Mention example of each. 10

8. Importance of radio-protectors and radio-sensitizers with example. Elaborate upon mechanism of action and their application. 10

9. a) TLD
   b) ICRP-recent recommendations 2x5

10. Describe basis of in vitro Nuclear Medicine procedures in current practice. 10

****

FINAL EXAM
DECEMBER 2012

NATIONAL BOARD OF EXAMINATIONS

NUCLEAR MEDICINE

PAPER – II

Time : 3 hours
Max. Marks : 100

NM/D/12/24/II

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

Write short notes on:

1. Significance of Non-FDG radiopharmaceuticals, current status and utility with examples. — 10

2. a) $99M_O/99_mT_c$ break through
   b) Equilibrium — 5X2

3. Discuss the use of Jaszczak phantom in evaluating system performance. — 10

4. Recent advances in radionuclide therapy. — 10

5. Application of an intra-operative probe in Nuclear Medicine with examples elaborated. — 10

6. a) C_{14} Breath Test – basis and applications.
   b) Dose response curve and its significance. — 5x2

7. How would you assess the dose delivered to any organ after administration of a specific radionuclide? — 10

8. Enumerate the properties of an ideal diagnostic radio pharmaceutical. What are the mechanisms of localization? — 10

9. List various isotopes & techniques used in emergency situation, elaborate upon one. — 10

10. a) Nuclear Medicine in evaluation of GB function.
    b) Thallium 201 & its use in Nuclear Medicine. — 5x2

****

FINAL EXAM
DECEMBER 2012

NATIONAL BOARD OF EXAMINATIONS

NUCLEAR MEDICINE

PAPER – III

Time : 3 hours
Max. Marks : 100

NM/D/12/24/III

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

Write short notes on:

1.	PET & SPECT imaging in differential diagnosis of dementia.	10
2.	a) Redifferentiation therapy – approaches and agents. b) Thyroiditis	5x2
3.	a) Prognostication using PET-CT technology. b) Metabolic biopsy:its basis and applications.	5x2
4.	a) Bone scan in benign bone disorders. b) Nuclear Medicine procedures in evaluation of drug abuse.	5x2
5.	Algorithmic evaluation of solitary thyroid nodule and management detail.	10
6.	Role of nuclear medicine in evaluation and management of NET in elaboration.	10
7.	a) Lympho scintigraphy or sentinel lymph node imaging. b) Evaluation of CSF leak.	5x2
8.	Normal variants and artifacts in PET imaging-significance.	10
9.	Non-oncological application of PET-CT.	10
10.	a) Fluorescent scanning. b) Role of PET-CT in lymphoma.	5x2

****

FINAL EXAM
DECEMBER 2012

NATIONAL BOARD OF EXAMINATIONS

NUCLEAR MEDICINE

PAPER – IV

Time : 3 hours
Max. Marks : 100

NM/D/12/24/IV

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

Write short notes on:

1.	Radio-nuclide procedures for organ transplant assessment.	10
2.	Work up and management of "Pregnant" lady with thyrotoxicosis.	10
3.	a) INES b) Time of Flight (TOF) in PET	5X2
4.	PET detectors - merits and demerits.	10
5.	PET-MR: its status and applications.	10
6.	a) Misadministration b) Standardized Uptake Value (SUV): uses and limitations	5x2
7.	HVL and TVL of radiation shield.	10
8.	a) Neutron monitors b) Dual time point imaging	5x2
9.	a) Polar maps b) ATA guidelines	5x2
10.	Status of radioimmunotherapy with specific examples to show its significance and utility.	10

****