FINAL EXAM
DECEMBER 2010

NATIONAL BOARD OF EXAMINATIONS

NUCLEAR MEDICINE

PAPER –I

NM/D/10/24/I

Time : 3 hours
Max. Marks : 100

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

Write short notes on:

1. Define count rate. What are the factors affecting count rate?
2. Define various radiation dose modifying factors and what are their implications?
3. What is a scintillation detector? Describe its characteristics and applications in Nuclear Medicine.
4. What is meant by contamination monitoring? Describe in detail its principles and objectives.
5. What are the various tomographic reconstruction techniques in relation to Nuclear Medicine procedures? Explain one in detail.
6. What is PACS? What type of images it can handle? Explain elaborately its set up and uses, in context of Nuclear Medicine.
7. What do you mean by collimation? Explain different types of collimator used in Nuclear Medicine, including collimation position emission tomography.
8. Discuss the interaction of electromagnetic radiation with matter.
9. What are different types of packages? Elaborate upon Transport Index and its utility.
10. What is neutron activation analysis? Describe its biomedical application.

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PAPER –II

Time : 3 hours
Max. Marks : 100 **NM/D/10/24/II**

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

Write short notes on:

1. What is $^{99}Mo/Tc^{99m}$ break through? How do you evaluate upon- elaborate and the need to know.
2. What is radioactive equilibrium? Give illustrative example and discuss its importance.
3. Write short note on scope of Ge^{68} /Ga^{68} in follow up of lymphoma in era of PET.
4. Infection imaging (both SPECT and PET) and its current status.
5. Radiopharmaceuticals for cardiac assessment. Elaborate upon metabolic assessment.
6. What do you mean by pain palliation? Write in detail on characteristics of each radionuclides for pain palliation.
7. Radio pharmaceuticals & procedures used in emergency Nuclear Medicine practice.
8. What are the known radionuclides of Iodine? Describe the application of each radionuclide in diagnostic or therapeutic Nuclear Medicine.
9. What is C^{14} Breath Test? How do you perform and give its importance of the test.
10. PET radio pharmaceutical beyond FDG: current status & utility.

NUCLEAR MEDICINE

PAPER –III

Time : 3 hours **NM/D/10/24/III**
Max. Marks : 100

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

Write short notes on:

1. Role of Nuclear Medicine in the evaluation and management of epilepsy.
2. Discuss histological classification of lymphoma with staging. How does FDG PET scan help in evaluation and management of lymphoma?
3. Role of Nuclear Medicine in the evaluation of drug addiction.
4. Adreno cortical surgery- Role of Nuclear Medicine in the evaluation.
5. Role of PET/CT and sentinel node technology in the evaluation and management of head and neck tumor.
6. Discuss a normal renogram. Write in brief its role and importance in obstructive uropathy including intervention renogram.
7. Algorythmic evaluation of a solitary thyroid nodule.
8. Normal variants and artifacts in FDG imaging.
9. Non-oncological applications of PET/CT.
10. Role of nuclear medicine in evaluation and management of breast cancer (Both SPECT-CT-Sentinel & PET-CT imaging).

NUCLEAR MEDICINE

PAPER –IV

Time : 3 hours
Max. Marks : 100

NM/D/10/24/IV

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

Write short notes on:

1. What is misadministration? Describe the types of misadministration that can occur in day to day practice and measure to reduce the effective dose in case.
2. What is SPM? How is functional imaging information from PET & SPECT used in Neurology?
3. What are radioprotectors and radiosensitizers? Compare and contrast.
4. ELISA, RIA & CLA- merits and demerits
5. Significance of animal PET imaging.
6. Describe basic principles of PMT. Write its advantages and disadvantages. Is PMT used in PET the same?
7. What are thermoluminiscent dosimeters? Explain their principle.
8. How do you manage a radioactive spill in a Nuclear Medicine deptt of different class?
9. Discuss various radio biological lessons learned from a nuclear accident
10. Most recent ICRP recommendation.