ALL INDIA INSTITUTE OF MEDICAL SCIENCES

Name of Course : MD NUCLEAR MEDICINE PAPER NO./SECTION : II

Max. Marks : 100 Time Allowed : 3 hours Month/Year of Exam : May 2011

All Questions are compulsory & carry equal marks.

Sr. No.	Questions	Marks allotted
1.	List different Isotopes of Iodine that have significance to Nuclear Medicine, enumerate their use with example.	10
2.	Role of NaI symporters and its role in Nuclear Medicine.	10
3.	Radiation monitoring devices & significance in Nuclear Medicine	10
4.	Importance of a RSO elaborate in Nuclear Medicine.	10
5.	Discuss Radio-respirometry in detail with example.	10
6.	Classify and describe with examples the biological effects of radiation in human.	10
7.	State the impurities that are commonly considered while assessing radionuclidic, in a $^{99}Mo/^{99m}Tc$ generator system with their recommended limits. Briefly describe the tests used to examine the sterility and Pyrogenicity. What is radiolysis?	5+5=10
8.	Classify and enumerate "non-FDG" PET tracers and their potential clinical uses that hold promise in oncological setting.	10
9.	What is the source of our information in radiobiology? State the difference between Absorbed dose, Equivalent dose and Effective dose? State the conventional and SI units of the aforementioned doses and their relations. Enumerate and state the differences between stochastic and non-stochastic effects of radiation with examples.	10
10.	Briefly state the principles and steps involved in the Medical management of Radiation emergency.	10

Name of Course : MD NUCLEAR MEDICINE

PAPER NO./SECTION : III

Max. Marks : 100 Time Allowed : 3 hours Month/Year of Exam : May 2011

All Questions are compulsory

Sr. No.	Questions	Marks allotted
1.	Role of Nuclear Medicine in evaluation & management of Epilepsy	10
2.	Short Note on : (1) PIOPED & its significance, Is it relevant today ? (2) Indication of SPECT-CT scanning in Abdominal Imaging.	5+5 = 10
3.	Emergency Nuclear Medicine procedures.	10
4.	Short Note on : (1) Role of Nuclear Medicine in Cardiac Emergency. (2) Renal transplant evaluation.	5+5
5.	Different routes of administration in Nuclear Medicine procedures, example each application with isotope used with mechanisim of uptake/ release	10
6.	Compare the relative efficacy of different modalities utilized to detect hibernating myocardium. How does it differ from the stunned myocardium?	10
7.	What are the types of Thyroiditis and their management.	10
8.	Current precise role of PET-CT in breast carcinoma, thyroid carcinoma and gastrointestinal stromal tumors.	10
9.	Enumerate commonly encountered physiological and benign situations/entities that give rise to false positive FDG-PET in routine oncological setting and discuss the measures/interventions adopted to identify them.	10
10.	Write Short notes on : (a) HAMA with radiolabeled monoclonal antibodies: Strategies to prevent them. (b) ^{18}F-Fluorodopa: the potential clinical applications.	5+5

ALL INDIA INSTITUTE OF MEDICAL SCIENCES

Name of Course : MD NUCLEAR MEDICINE

PAPER NO./SECTION : IV

Max. Marks : 100 Time Allowed : 3 hours Month/Year of Exam : May 2011

All Questions are compulsory.

Sr. No.	Questions	Marks allotted
1.	Role of Micro-PET in translational research	10
2.	Redifferentiation of tumors-principles & significance in Nuclear Medicine and -agents used.	10
3.	In the development of a new radiopharmaceutical your steps in proceedings to release the goal including role of PET against conventional drug development methods.	10
4.	Impact of intra-operative Gamma Probe in clinical practice. Impact of metabolic Biopsy in PET-CT	5+5
5.	Role of Nuclear Medicine in detection of H-pylori.	10
6.	Describe the current perspectives in In-vivo stem cell imaging using molecular nuclear medicine imaging with special reference to oncology and cardiology.	10
7.	Describe the potential clinical applications of PET/CT in Non malignant thoracic disorders.	10
8.	Write short notes on : (a) Relative advantages of I-124 PET/CT in thyroid cancer imaging compared to the conventional imaging with I-131/ I-123. (b) PET/CT based RT planning : Current status and Innovations	5+5
9.	Compare and contrast the following : (a) 18F-fluoride and 99mTc-MDP for bone imaging; (b) 11C-Pittsburgh compound B (PiB) versus FDG-PET for imaging Alzheimer's Disease. (c) 64 Cu and it's applications	4+3+3
10.	Write a short essay on Impact of (a) Time-of-Flight on PET Tumor Detection and (b) Solid-state-detectors in nuclear cardiology.	5+5

ALL INDIA INSTITUTE OF MEDICAL SCIENCES

Name of Course : MD NUCLEAR MEDICINE PAPER NO./SECTION : 1

Max. Marks : 100 Time Allowed : 3 hours Month/Year of Exam : May 2011

All Questions are compulsory & carry equal marks.

Sr. No.	Questions	Marks allotted
1.	Reconstruction techniques in Nuclear Medicine . Elaborate upon one such technique.	10
2.	Most recent ICRP recommendation & its significance in Nuclear Medicine.	10
3.	Classify radioactive waste generated in a large Nuclear Medicine Department . Elaborate upon disposals and limits.	10
4.	Fluorescent scanning and compare its merits-demerits with Nuclear Medicine Procedures .Take one example.	10
5.	Principle and Applications of Neutron activation analysis.	10
6.	Types of collimators used in Nuclear Medicine and their use with examples in SPECT imaging. Briefly describe the quality control tests for a newly acquired SPECT-CT System.	10
7.	State the Radioactive decay equation and drive this equation from the Radioactive decay law.	10
8.	Briefly state the factors affecting the measurement of standardized uptake value of a lesion in whole body FDG-PET and the measures to be taken to standardize them.	10
9.	Briefly describe the working of a Dose Calibrator and Personal dosimetry devices used in a Nuclear Medicine facility.	10
10.	Enumerate and discuss various interactions of radiation with matter and their significance in Nuclear Medicine imaging. Give examples	10