NUCLEAR MEDICINE

PAPER – I

NM/D/15/24/I

Time : 3 hours
Max. Marks : 100

Important instructions:

- *Attempt all questions in order.*
- *Each question carries 10 marks.*
- *Read the question carefully and answer to the point neatly and legibly.*
- *Do not leave any blank pages between two answers.*
- *Indicate the question number correctly for the answer in the margin space.*
- *Answer all the parts of a single question together.*
- *Start the answer to a question on a fresh page or leave adequate space between two answers.*
- *Draw table/diagrams/flowcharts wherever appropriate.*

Write short notes on:

1.	Define radiation exposure, absorbed dose, effective dose and equivalent dose, with the units used to express them.		2.5x4
2.	a) What is PACS? b) Its usefulness in a large nuclear medicine department in a tertiary care hospital.		2+8
3.	a) Chi Square test b) Students 't' test		5+5
4.	a) Different types of crystals used in PET scanners. b) What are the relative advantages and disadvantages of each?		5+5
5.	What are different types of parent-daughter equilibrium? Illustrate with examples.		3+7
6.	What is the role of phantoms in Nuclear Medicine? Enumerate the phantoms used in QC of SPECT, PET & CT. Describe the features of Jaszczak Phantom.		3+4+3
7.	a) Parts and functions of TLD. b) How does a TLD differ from a film badge?		5+5
8.	a) Reconstruction techniques in Nuclear Medicine imaging. b) Geiger Muller Counters.		5+5
9.	a) Factors affecting counting of radioactivity. b) Categories of radioactive packages for transport.		5+5
10.	a) Define half-life decay constant. b) A radionuclide decays 1/4th of its activity in 3 hours and 40 minutes. Calculate the physical decay constant and physical half life (t½) of the radionuclide.		2+8

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