NUCLEAR MEDICINE

PAPER-I

Time: 3 hours NM/J/20/24/I
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. Effective dose and equivalent dose – differentiate decay scheme of Mo99. 5+5

2. Transient and secular equilibrium – concept, examples and relevance in nuclear medicine practice. 10

3. Compartmental models, discuss with suitable radionuclide example. 10

4. a) ICRP recommendations for dose limits for radiation professionals and general public. 5+5
   b) How would you contain major radiation spill?

5. a) What are scintillation detectors? Describe the various types of scintillation detectors? 5+5
   b) Scintillator used in a Gamma camera.

6. a) Receiver Operator Characteristic (ROC) Curve. 5+5
   b) Randomized Controlled Trial (RCT).

7. a) Semiconductor detectors and scintillation detectors, and their comparison. 5+5
   b) Specific gamma ray constant.

8. Transport of radioactive material. 10

9. Define following: 5X2
   a) Auger Electron
   b) Bremsstrahlung Radiation.
   c) Cerenkov Radiation.
   d) Coincidence Time Resolution (CTR).
   e) Noise Equivalent Count Rate (NECR).

10 Describe embryology, normal and ectopic anatomical locations of parathyroids. What are the causes of surgical failure in hyperparathyroidism? 5+5

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