

NUCLEAR MEDICINE

PAPER-II

Time: 3 hours
Max. Marks:100

NM/D/20/24/II

Important Instructions:

- *You are provided with 5 answer sheet booklets. Each individual answer sheet booklet consists of 10 pages excluding the covering jackets.*
- *Answers to all the questions must be attempted within these 5 answer sheet booklets which must be later tagged together at the end of the exam.*
- *No additional supplementary answer sheet booklet will be provided.*
- *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. a) ^{18}F -FET vs. ^{18}F -FDOPA in glial tumors. 5+5
b) Why ^{18}F Sodium Fluoride bone scan is not able to replace $\text{Tc}^{99\text{m}}$ MDP bone scan?
2. a) LAL test . 5+5
b) Swipe test.
3. What are the principles radionuclide generators in nuclear medicine? 7+3
Describe the various PET radionuclide producing generators.
4. Name the various available bone pain palliation agents for the Indian 6+4
patients. What are the emerging radiopharmaceuticals for similar applications?
5. a) ^{18}F -Choline vs. $^{99\text{m}}\text{Tc}$ -Sestemibi. 5+5
b) ^{18}F -Fluciclovine vs. ^{68}Ga -PSMA11.
6. Name useful alpha-emitters currently available and their characteristics. 7+3
Why in India we are not able to produce such radionuclides?
7. Describe various bi-functional chelators. Justify how twenty-first century 5+5
radiochemistry has been changed due to such chelants.
8. Name various peptide-based radiopharmaceuticals and describe one in 5+5
details.
9. a) Imaging agents for insulinoma. 5+5
b) Imaging agents for Neuroblastoma.
10. Describe the imaging artefacts in SPECT and SPECT/CT. How will you 7+3
avoid or minimize them?
