

Question Paper

Exam Date & Time: 19-Jun-2024 (10:00 AM - 01:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

FIFTH SEMESTER B.Sc.NUCLEAR MEDICINE TECHNOLOGY DEGREE EXAMINATION-JUNE 2024
SUBJECT: NMT3102- THERAPEUTIC NUCLEAR MEDICINE
(SCHEME 2020)

Answer ALL questions.

Draw neat and labelled diagram as and when required.

Marks: 100

Duration: 180 mins.

- 1) A 48yr old Rheumatoid arthritis patient has come to nuclear medicine department for Radiosynovectomy. (20)
i) Which pre-treatment scan would you do in our department and why?
ii) Which radiopharmaceuticals are used for the treatment ?
iii) Discuss about the patient preparation and post treatment precautions patient must take.
(4+6+10 = 20 marks)
- 2) Lu-DOTATATE - (20)
i) Discuss in detail about the physical and chemical properties of the radionuclide Lutetium.
ii) Write in detail about the pharmaceutical mentioned including its full form , structure, mechanism of action, types and differences among them.
(10+2+2+2+4 = 20 marks)
- 3) A patient with Graves' disease is about to receive radioiodine therapy. However, the patient states that he has been taking tablet neomercazole and has not stopped it. Would you like to go ahead with the therapy ? Give reasons (10)
- 4) List bone pain palliation radionuclides and their properties. Discuss briefly any two radiopharmaceuticals. (10)
- 5A) Double stranded versus single stranded DNA breaks (5)
- 5B) Production of I-131 (5)
- 5C) Write in brief about the radiopharmaceuticals used for treating recurrent keloids. (5)
- 5D) Discuss in brief about the interaction of radiation with matter. (5)
- 5E) With scientific reasons state the rationale behind having a delay tank for therapy ward. (5)
- 5F) Write short note on PSMA -619 (5)
- 6A) List TWO radiopharmaceuticals used for TARE (2)
- 6B) List TWO cyclotron produced therapeutic radionuclides (2)
- 6C) List the routes of administration of various therapeutic radiopharmaceuticals. (2)
- 6D) Decay scheme of I-131 (2)
- 6E) List FOUR alpha emitting radionuclides. (2)

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Question Paper

Exam Date & Time: 18-Jun-2024 (10:00 AM - 01:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

FIFTH SEMESTER B.Sc.NUCLEAR MEDICINE TECHNOLOGY DEGREE EXAMINATION-JUNE 2024
SUBJECT: NMT3103- CLINICAL NUCLEAR MEDICINE -I
(SCHEME 2020)

Marks: 100

Duration: 180 mins.

Answer all the questions.

- 1) A 10 year old anaemic child complaining of episodic abdominal pain is referred to Nuclear Medicine department. Which scanning procedure would be recommended for the patient? Describe the procedure in detail. (20)
- 2) What is the rationale behind using ^{99m}Tc -HMPAO-WBCs for infection imaging? What will be procedure followed to image a bowel infection patient and the expected distribution of ^{99m}Tc -HMPAO-WBCs? (20)
(5+15 = 20 marks)
- 3) Discuss the radio tracers and the imaging protocols used for parathyroid imaging. (10)
(2+8 = 10 marks)
- 4) How can you detect chronic obstructive pulmonary disorder using a Nuclear Medicine imaging procedure? Write about the radiopharmaceuticals used and describe the study procedure using any one of them. (10)

5) Write a short note on

- 5A) Application of Ga-67 in Nuclear Medicine (5)
- 5B) Physiological uptake of ^{99m}Tc -MDP (5)
- 5C) Ideal radiopharmaceutical characteristics for Gastric emptying study (5)
- 5D) Feedback mechanism for thyroid hormone regulation (5)
- 5E) Bio-distribution of ^{99m}Tc -pertechnetate (5)
- 5F) Uptake mechanism for ^{99m}Tc -MIBI (5)

6) Briefly state why:

- 6A) Potassium perchlorate is used to block thyroid uptake (2)
- 6B) Breast feeding should be stopped after ^{131}I therapy. (2)
- 6C) Denatured RBCs are used for spleen imaging (2)
- 6D) ^{99m}Tc -HIDA is used for liver function assessment (2)
- 6E) Tc- 99m pertechnetate is used to detect Meckel diverticulum (2)

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