

[LB 0212]

AUGUST 2012

Sub. Code: 2113

B.Sc. NUCLEAR MEDICINE TECHNOLOGY

SECOND YEAR

PAPER III – NUCLEAR MEDICINE TECHNIQUES AND

SPECIAL PROCEDURES

Q.P. Code : 802113

Time : Three hours

Maximum : 100 marks

(180 Mins) Answer ALL questions in the same order.

I. Elaborate on:

Pages Time Marks
(Max.)(Max.)(Max.)

- | | | | |
|--|---|----|----|
| 1. Indications for high dose radioiodine therapy. Describe the procedure and precautions followed during high dose radioiodine therapy? Are there any special instructions for the patients after the therapy? | 7 | 20 | 10 |
| 2. Preparation of a patient for Meckels scintigraphy? Name the isotopes and explain the procedure in detail. | 7 | 20 | 10 |
| 3. Indications, patient preparation and procedure of ¹³¹ Iodine Meta Iodo Benzyl Guanidine scintigraphy. | 7 | 20 | 10 |

II. Write notes on:

- | | | | |
|--|---|----|---|
| 1. Indications for thyroid scintigraphy. | 4 | 10 | 5 |
| 2. Functions of hormones. | 4 | 10 | 5 |
| 3. Antigen –antibody reaction. | 4 | 10 | 5 |
| 4. What you would do when a patient has a seizure. | 4 | 10 | 5 |
| 5. Protein loss study. Briefly explain the labeling procedure. | 4 | 10 | 5 |
| 6. Acquisition parameters for a dynamic renal study. | 4 | 10 | 5 |
| 7. Emergency trolley and medications to be maintained. | 4 | 10 | 5 |
| 8. Pharmacological stress. | 4 | 10 | 5 |

III. Short answers on:

- | | | | |
|--|---|---|---|
| 1. Location and function of gall bladder. | 2 | 4 | 3 |
| 2. When you would start the acquisition for a hepatic perfusion study and why? | 2 | 4 | 3 |
| 3. When you would ideally start the acquisition for a renal perfusion study. | 2 | 4 | 3 |
| 4. Functions of lungs. | 2 | 4 | 3 |
| 5. Enzyme-linked immunosorbent assay. | 2 | 4 | 3 |
| 6. Multigated acquisition. Where is it used? | 2 | 4 | 3 |
| 7. Glomerular filtration rate and Effective renal plasma flow. | 2 | 4 | 3 |
| 8. Physiology of uptake in skeletal scintigraphy. | 2 | 4 | 3 |
| 9. Application of Isotopes in tumor imaging. | 2 | 4 | 3 |
| 10. Radiopharmaceuticals/isotopes used in imaging infection/ inflammation. | 2 | 4 | 3 |

[LD 0212]

AUGUST 2013

Sub.Code :2113

**B.SC. NUCLEAR MEDICINE TECHNOLOGY
SECOND YEAR
PAPER – III NUCLEAR MEDICINE TECHNIQUES AND
SPECIAL PROCEDURES.**

Q.P. Code: 802113

Time: Three hours

Maximum: 100 Marks

Answer All questions

I. Elaborate on:

(3 X 10 = 30)

1. Myocardial perfusion study
2. ¹³¹Iodine- Metaiodobenzylguanidine Scintigraphy
3. Applications of tumor imaging

II. Write Notes on:

(8 X 5 = 40)

1. Radiopharmaceuticals used in myocardial viability study
2. Radiopharmaceuticals used in renal scintigraphy
3. In vivo labeling of red blood cells
4. Meckelsscintigraphy
5. Estimation of right ventricular function
6. Drugs to be avoided prior to ¹³¹Iodine scintigraphy
7. Mechanism of uptake ¹⁸F-Fluorodeoxyglucose
8. How to perform lymphoscintigraphy.

III. Short Answers on:

(10 X 3 = 30)

1. Define scintillation. How is it different from fluorescence?
2. Mechanism of uptake in pulmonary perfusion studies.
3. ^{99m}Tc-Technetium – Dimercaptosuccinic acid
4. Glomerular filtration rate
5. Cardiac output
6. Radiation Synovectomy
7. ⁸⁹ Sr-Strontium
8. Patient preparation prior to hepatobiliary scintigraphy
9. Bolus injection
10. Gross anatomy of liver.

[LF 0212]

AUGUST 2014

Sub.Code :2113

B.Sc. NUCLEAR MEDICINE TECHNOLOGY

SECOND YEAR

PAPER – III NUCLEAR MEDICINE TECHNIQUES AND
SPECIAL PROCEDURES.

Q.P. Code: 802113

Time: Three hours

Maximum: 100 Marks

Answer All questions

I. Elaborate on:

(3 x 10 = 30)

1. What are the indications for myocardial perfusion scintigraphy? Explain the technique of stress myocardial perfusion scintigraphy.
2. Mention the tracers used for hepatobiliary scintigraphy. Describe the technique of hepatobiliary scintigraphy.
3. Write in detail the procedure for Meckel's diverticulum scintigraphy.

II. Write Notes on:

(8 x 5 = 40)

1. Renal cortical scintigraphy.
2. Radioiodine whole body survey.
3. Lung ventilation study.
4. Glomerular filtration rate estimation.
5. Gastric emptying time study.
6. Blood volume estimation.
7. Left ventricular ejection fraction.
8. Lymphoscintigraphy.

III. Short Answers on:

(10 x 3 = 30)

1. ^{131}I - Metaiodobenzyl guanidine.
2. Diuretic renogram.
3. Renal transplant perfusion study.
4. Infection imaging.
5. Vesicouretric reflux.
6. Parathyroid scintigraphy.
7. Principle of Radioimmunoassay.
8. Thyrotoxicosis.
9. Filters in image processing.
10. Split renal function.

[LG 0215]

FEBRUARY 2015

Sub.Code :2113

B.Sc. NUCLEAR MEDICINE TECHNOLOGY

SECOND YEAR

PAPER III – NUCLEAR MEDICINE TECHNIQUES AND
SPECIAL PROCEDURES.

Q.P. Code: 802113

Time: Three Hours

Maximum: 100 Marks

Answer All questions

I. Elaborate on:

(3 x 10 = 30)

1. Describe the technique of Multigated Blood pool Acquisition and the steps in processing of images for estimation of ejection fraction of left ventricle.
2. Mention the radionuclide studies for renal transplant evaluation. Describe the technique of renal transplant scintigraphy using Tc99m DTPA.
3. What are the clinical indications for hepatobiliary scintigraphy? Write in detail about the technique of scintigraphy in any one of them.

II. Write Notes on:

(8 x 5 = 40)

1. Diuretic renogram.
2. Three phase bone scintigraphy.
3. Perchlorate discharge test.
4. Gates' method of GFR estimation.
5. Stress myocardial perfusion study.
6. Parathyroid scintigraphy.
7. Precautions to be followed during radioiodine administration.
8. Scintigraphy for localization of gastrointestinal bleed.

III. Short Answers on:

(10 x 3 = 30)

1. Split renal function.
2. Principle of lung perfusion study.
3. Principle of Meckel's diverticulum scintigraphy.
4. Thyroxine after total thyroidectomy in thyroid cancer patients.
5. Vesicoureteric reflux.
6. Nephrostomy.
7. Pyeloplasty.
8. Tracheostomy.
9. Ewing's sarcoma.
10. Radiation synovectomy
 1. Filters in image processing.
 2. Split renal function.

[LH 0815]

AUGUST 2015

Sub.Code :2113

B.Sc. NUCLEAR MEDICINE TECHNOLOGY

SECOND YEAR

**PAPER III – NUCLEAR MEDICINE TECHNIQUES AND
SPECIAL PROCEDURES.**

Q.P. Code: 802113

Time: Three Hours

Maximum: 100 Marks

Answer All questions

I. Elaborate on:

(3 x 10 = 30)

1. A patient has been referred for ¹³¹I MIBG diagnostic scan. Discuss the patient preparation, scan protocol and related precautionary instruction.
2. A patient has been referred to nuclear medicine department to evaluate left renal PUP obstruction. Discuss the patient preparation, radiopharmaceutical, acquisition, processing protocol. Comment on the global renogram curve patterns.
3. What is low dose ¹³¹I scan? What are the patient preparations? Discuss the imaging and processing protocols.

II. Write Notes on:

(8 x 5 = 40)

1. Advantage of ²⁰¹Tl-thallous chloride myocardial perfusion scan over ^{99m}Tc MIBI.
2. Describe the method of cholescintigraphy.
3. Indications for renal cortical imaging.
4. Meckels' Scintigraphy.
5. Inter and intra ictal scans in epilepsy.
6. Indications for thyroid scintigraphy.
7. Lung perfusion scan.
8. Different protocols for parathyroid imaging.

III. Short Answers on:

(10 x 3 = 30)

1. Why do we wait three hour after injection before bone scan?
2. What is MUGA and where it is used?
3. Per-chlorate discharge test.
4. Different infection imaging protocols.
5. RBC survival study.
6. Bone pain palliation.
7. Frusemide intervention in renal scintigraphy.
8. Radio-aerosols in lung ventilation scan.
9. Discharge criteria of high dose ¹³¹I patient.
10. ^{99m}Tc TRODAT scan.

[LI 0216]

FEBRUARY 2016

Sub.Code :2113

B.Sc. NUCLEAR MEDICINE TECHNOLOGY

SECOND YEAR

**PAPER III – NUCLEAR MEDICINE TECHNIQUES AND
SPECIAL PROCEDURES.**

Q.P. Code: 802113

Time: Three Hours

Maximum: 100 Marks

Answer All questions

I. Elaborate on:

(3 x 10 = 30)

1. A 56 year old female patient with known history papillary carcinoma of thyroid has been referred to department of nuclear medicine for ¹³¹I ablation. As nuclear medicine technologist discuss the treatment protocol, pre and post therapy precautionary instruction.
2. A 5 year old boy has referred with history of the acute stomach pain and bleeding per rectum. As a nuclear medicine technologist what investigation will you carry out? Describe the patient preparation, radiopharmaceuticals, acquisition and processing protocols.
3. A 12 year old girl with suspicion of osteomyelitis of lower one third of the right femur has been referred for bone scan. Write about the a) radiopharmaceutical and dose. b) patient preparation pre and post injection acquisition and processing protocol in detail.

II. Write Notes on:

(8 x 5 = 40)

1. Indications for Myocardial perfusion imaging.
2. Blood volume estimation.
3. DMSA (V) imaging.
4. How do you confirm the brain death using nuclear medicine investigation?
5. Gates GFR study by syringe image method.
6. Indications for thyroid scintigraphy.
7. Protocol for radio-iodine uptake.
8. Lung perfusion scan.

III. Short Answers on:

(10 x 3 = 30)

1. Patient preparation prior to hepatobiliary scintigraphy.
2. Differential renal function.
3. IRMA and RIA.
4. Low dose whole body ¹³¹I scan.
5. Infection imaging use labeled WBC.
6. Esophageal transit time studies.
7. ³² Phosphorus therapy.
8. Shilling Test.
9. Significance of Frusemide in Renal investigation.
10. First pass study.

[LJ 0816]

AUGUST 2016

Sub.Code :2113

B.Sc. NUCLEAR MEDICINE TECHNOLOGY

SECOND YEAR

**PAPER III – NUCLEAR MEDICINE TECHNIQUES AND
SPECIAL PROCEDURES**

Q.P. Code: 802113

Time: Three Hours

Maximum: 100 Marks

Answer All questions

I. Elaborate on:

(3 x 10 = 30)

1. Indications for high dose radioiodine therapy. Describe the procedure and precautions followed during high dose radioiodine therapy? Are there any special instructions for the patients after the therapy?
2. Mention the radionuclide studies for renal transplant evaluation. Describe the Technique of renal transplant scintigraphy using Tc99m DTPA.
3. A patient has been referred to nuclear medicine department to evaluate left renal PUJ Obstruction. Discuss the patient preparation, radiopharmaceutical, acquisition, Processing protocol. Comment on the global renogram curve patterns.

II. Write Notes on:

(8 x 5 = 40)

1. Gates' method of GFR estimation.
2. Parathyroid scintigraphy.
3. Precautions to be followed during radioiodine administration.
4. Sentinel node detection.
5. Inter and intra ictal scans in epilepsy.
6. Antigen – antibody reaction.
7. Emergency trolley and medications to be maintained.
8. Drugs to be avoided prior to ¹³¹Iodine scintigraphy.

III. Short Answers on:

(10 x 3 = 30)

1. Location and function of gall bladder.
2. What is MUGA and where it is used?
3. Nephrostomy.
4. Why do we wait three hour after injection before bone scan?
5. Indications for renal cortical imaging.
6. ⁸⁹Strontium.
7. Radiation Synovectomy.
8. Pharmacological stress.
9. Gross anatomy of liver.
10. Principle of lung perfusion study.

[LK 0217]

FEBRUARY 2017

Sub.Code :2113

B.Sc. NUCLEAR MEDICINE TECHNOLOGY

SECOND YEAR

**PAPER III – NUCLEAR MEDICINE TECHNIQUES AND
SPECIAL PROCEDURES**

Q.P. Code: 802113

Time: Three Hours

Maximum: 100 Marks

Answer All questions

I. Elaborate on:

(3 x 10 = 30)

1. Indications, patient preparation and procedure of ¹³¹Iodine Meta Iodo Benzyl Guanidine scintigraphy.
2. Applications of tumor imaging.
3. What are the indications for myocardial perfusion scintigraphy? Explain the technique of stress myocardial perfusion scintigraphy.

II. Write Notes on:

(8 x 5 = 40)

1. Renal cortical scintigraphy.
2. Lung ventilation study.
3. Diuretic Reno gram.
4. Vesicoureteric reflux.
5. Infection imaging.
6. Filters in image processing.
7. Parathyroid scintigraphy.
8. Infarct avid Imaging.

III. Short Answers on:

(10 x 3 = 30)

1. Radioiodine whole body survey.
2. Principle of Radioimmunoassay.
3. Three phase bone scan.
4. Lymphoscintigraphy.
5. Methods of labelling RBC with Tc99m.
6. Blood volume estimation.
7. Isotopes in bone pain palliation.
8. Pyeloplasty.
9. Perchlorate discharge test.
10. Scintigraphy for localization of gastrointestinal bleed.

B.Sc. NUCLEAR MEDICINE TECHNOLOGY
SECOND YEAR
PAPER III – NUCLEAR MEDICINE TECHNIQUES AND
SPECIAL PROCEDURES

Q.P. Code: 802113

Time: Three Hours

Maximum: 100 Marks

Answer All questions

I. Elaborate on:

(3 x 10 = 30)

1. The pathology of Bone disease with indications for Bone scan, patient preparation and radiotracer dosage with their administration for Bone scan.
2. The anatomy and physiology of brain with conventional brain scans, indications and radiotracers used.
3. In vitro nuclear medicine techniques used to estimate T3, T4 and TSH.

II. Write Notes on:

(8 x 5 = 40)

1. Parathyroid scintigraphy.
2. Stress myocardial perfusion study.
3. Comparison of renal tubular and cortical agents.
4. ^{99m}Tc RBC tagging procedures.
5. Nuclear medicine procedure for thyroid malignancy.
6. Compartmental analysis in Radionuclide studies.
7. Lung ventilation study.
8. Interventional drugs used in scintigraphic studies.

III. Short Answers on:

(10 x 3 = 30)

1. Vitamin B₁₂ absorption studies.
2. Ejection fraction calculation.
3. Standard curve in RIA.
4. Nuclear medicine procedure for Biliary atresia.
5. Radioimmunotherapy.
6. Venography.
7. Protein loss studies.
8. Survival curves.
9. Use of ECG in NM cardiac studies.
10. Au 198 application.

B.Sc. NUCLEAR MEDICINE TECHNOLOGY

SECOND YEAR

**PAPER III – NUCLEAR MEDICINE TECHNIQUES AND
SPECIAL PROCEDURES**

Q.P. Code: 802113

Time: Three Hours

Maximum: 100 Marks

Answer All questions

I. Elaborate on:

(3 x 10 = 30)

1. The principles of RIA and IRMA along with the major differences between the two procedures.
2. The principle of Scintigraphy along with the comparison of static and dynamic scans.
3. The anatomy and physiology of Urinary tract and procedures of renogram to obtain split function, GFR and ERPF.

II. Write Notes on:

(8 x 5 = 40)

1. Meckel's scintigraphy.
2. Multigated acquisition.
3. Leukocyte labeled study.
4. Hepatic artery perfusion study.
5. Pre and Post therapy I131 Whole body scans.
6. Adrenal scan.
7. Perchlorate discharge test.
8. Three Phase Bone scan.

III. Short Answers on:

(10 x 3 = 30)

1. ^{99m}Tc heat damaged RBC study.
2. Scrotal scintigraphy.
3. ⁵¹Cr application in Nuclear Medicine procedures.
4. Scintigraphy for Cerebrospinal fluid leak.
5. Lasix interventional study.
6. Renal transplant study.
7. Pancreatic imaging.
8. Bolus injection.
9. Global and regional stroke volumes.
10. Lingual thyroid study.

B.Sc. NUCLEAR MEDICINE TECHNOLOGY

SECOND YEAR

**PAPER III – NUCLEAR MEDICINE TECHNIQUES AND
SPECIAL PROCEDURES**

Q.P. Code: 802113

Time: Three Hours

Maximum: 100 Marks

Answer All questions

I. Elaborate on:

(3 x 10 = 30)

1. The pathology of respiratory diseases – indications for scintigraphy – perfusion and ventilation studies, patient preparation, radiotracers used and administration technique.
2. The anatomy and pathological conditions of cardiovascular system, along with the techniques for infarct avid imaging and shunt evaluation.
3. Techniques of Esophageal transit study, Gastro esophageal reflux, Gastric emptying studies and Gastro Intestinal bleeding scintigraphy.

II. Write Notes on:

(8 x 5 = 40)

1. Nuclear medicine procedures for haematological disorders.
2. Hepatobiliary scan.
3. ^{99m}Tc Sulfur colloid scan.
4. Vesico ureteric reflux study.
5. Lymphoscintigraphy.
6. Radiopharmaceuticals for tumor imaging.
7. Significance of Cardiac cycle in Nuclear Cardiology.
8. Radioiodine therapy for thyrotoxicosis.

III. Short Answers on:

(10 x 3 = 30)

1. ELISA.
2. Myocardial viability study.
3. T_{max} and t_{1/2}.
4. First pass study.
5. Intravascular particulate radionuclide therapy.
6. Schilling test.
7. ³²P dosage.
8. Salivary gland imaging.
9. ^{99m}Tc MIBI scan in Endocrinology.
10. Labelled monoclonal antibodies.

B.Sc. NUCLEAR MEDICINE TECHNOLOGY
SECOND YEAR
PAPER III – NUCLEAR MEDICINE TECHNIQUES AND
SPECIAL PROCEDURES

Q.P. Code: 802113

Time: Three Hours

Maximum: 100 Marks

Answer All questions

I. Elaborate on:

(3 x 10 = 30)

1. A 23 year old cricketer came has constant pain in his Left heel which is very disturbing to him. Routine Radiological tests were normal. Describe in detail about the bone scan procedure and possible causes of poor quality images in him.
2. A 23 year old lady developed a painful swelling in the Thyroid Region of her neck for which she had routine radiological tests. Describe in detail how the thyroid uptake and scan could be performed on her.
3. Methods of evaluation of kidney function and GFR estimation by Nuclear Medicine Techniques.

II. Write Notes on:

(8 x 5 = 40)

1. MIRD Dose Calculations.
2. Radionuclide Imaging of GI Bleeding.
3. Patient preparation for Radioiodine Therapy.
4. Estimation of Gall Bladder ejection fraction.
5. Parotid Gland Imaging Method.
6. Labelled monoclonal antibodies.
7. Collimators in Gamma Camera.
8. Myocardial Perfusion Imaging Methods.

III. Short Answers on:

(10 x 3 = 30)

1. Lacrimal Gland Imaging.
2. Radionuclide Milk Scan.
3. Respiratory Grading in PET CT Scan.
4. Bone Marrow Imaging.
5. Tracers used in Liver and Spleen Imaging.
6. Nuclear Scan for Pulmonary Embolism.
7. Testicular Scan Tracer.
8. Neuroendocrine Tumor Imaging.
9. Radionuclide Ventriculography (MUGA).
10. Commonly used tracers in Cerebral Perfusion Scan.

B.Sc. NUCLEAR MEDICINE TECHNOLOGY
SECOND YEAR
PAPER III – NUCLEAR MEDICINE TECHNIQUES AND
SPECIAL PROCEDURES

Q.P. Code: 802113

Time: Three Hours

Maximum: 100 Marks

Answer All questions

I. Elaborate on:

(3 x 10 = 30)

1. A fifty year old lady with hypertension, diabetes and swelling in her left lower limb only. List out at least 3 possible nuclear scans that could be done in her and describe in detail the technology and techniques involved in doing a lymphoscintigram.
2. A fifty year old male patient with hypertension and diabetes complains of breathlessness and tender swelling of the calf muscles in his left lower limb. List at least 3 possible Nuclear Scans that will be helpful to his physician for managing his clinical condition and describe in detail the procedures involved in doing a Lung Perfusion Scan.
3. Discuss in detail about the procedures involved in performing a Stress – Rest Myocardial Perfusion Study.

II. Write Notes on:

(8 x 5 = 40)

1. Coincidence Imaging.
2. Intra Abdominal Bleed Imaging.
3. Identification of Duodeno-gastric Reflux in Hepatobiliary Imaging.
4. DTPA Renal Scan Method.
5. SPECT Tracers that cross Blood Brain Barrier.
6. Star Artefact.
7. Scintimammography.
8. PET Bone Scans.

III. Short Answers on:

(10 x 3 = 30)

1. 5 Common Radiopharmaceuticals in Oncology.
2. Imaging Meckel's Diverticulum.
3. Common Isotopes of Iodine in Nuclear Medicine.
4. Uses of MIBI.
5. Complications in Post-Renal Transplant Imaging.
6. Scatters in Imaging Processing.
7. Protocols in PET-CT.
8. Testicular Scan.
9. ^{99m}Tc- Sulphur Collid.
10. Crystals used in PET Detectors.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0321]

MARCH 2021

Sub. Code: 2113

(AUGUST 2020 EXAM SESSION)

B.Sc. NUCLEAR MEDICINE TECHNOLOGY

SECOND YEAR (Regulations 2010-2011)

**PAPER III – NUCLEAR MEDICINE TECHNIQUES AND
SPECIAL PROCEDURES**

Q.P. Code : 802113

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Stress and Rest Myocardial perfusion scintigraphy indications, radiopharmacy, stress types, acquisition parameters.
2. A 48 yrs old female patient was suffering from severe pain in the hip near prosthesis. The doctor has a Query of Infection in site of prosthesis. What scan would you do to confirm it?
3. Explain I¹³¹ MIBG scintigraphy.

II. Write Notes on:

(8 x 5 = 40)

1. What are specific and Non specific tumor agents?
2. Explain the procedure for GI bleed.
3. I¹³¹ uptake studies.
4. The patient is diagnosed with the sudden weight loss and palpitations. What will be the diagnosis and what scan will you do to confirm it?
5. What are the precaution should be done before administration of Labelled Monoclonal Antibodies?
6. Explain single Isotope and Dual isotope methods in Parathyroid scintigraphy.
7. Explain about the hepatobiliary scintigraphy.
8. Write in Brief about Meckel's Diverticulum.

III. Short Answers on:

(10 x 3 = 30)

1. Rps used for renal cortical imaging, Localization and Indications.
2. Difference between IRA and IRMA.
3. What is ERPF?
4. Define Stroke volume.
5. What are the Rps Used for Brain Death imaging and its mechanism of localization?
6. Define Diuertics with example.
7. ELISA.
8. What is Cisternography?
9. Gastric emptying studies.
10. What the hormones produced in adrenal gland?

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0222]

**FEBRUARY 2022
(AUGUST 2021 EXAM SESSION)**

Sub. Code: 2113

**B.Sc. NUCLEAR MEDICINE TECHNOLOGY
SECOND YEAR (Regulations 2010-2011)
PAPER III – NUCLEAR MEDICINE TECHNIQUES AND
SPECIAL PROCEDURES
*Q.P. Code: 802113***

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on: **(3 x 10 = 30)**

1. Describe in detail with diagram the estimation of ejection fraction of left ventricle.
2. Describe in detail the Lung ventilation scintigraphy using Tc99m DTPA.
3. Mention the clinical indications of skeletal scintigraphy and describe skeletal scintigraphy?

II. Write Notes on: **(8 x 5 = 40)**

1. Accuracy & Constancy test.
2. Describe Low dose therapy.
3. Radionuclide peptide receptor therapy.
4. Various routes of administration of radio nuclides
5. I-131 pre-therapy instructions.
6. Parathyroid scintigraphy.
7. Can pregnant patients undergo bone scan.
8. How will you discharge patient from isolation ward.

III. Short Answers on: **(10 x 3 = 30)**

1. Indications for Thyroid Imaging 131 I Uptake studies
2. Principle of tumor imaging.
3. Radio immune assay disadvantages.
4. Precautions to be followed during inhalation of Aerosols.
5. Brain scintigraphy- radio pharmaceuticals.
6. Radio nuclides used for liver spleen scintigraphy.
7. Characteristics of therapeutic radionuclides.
8. Patients preparation Cisternography.
9. Lymphoscintigraphy: Radio pharmaceuticals.
10. Why 32P and 89Sr not used now for palliative therapy.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0423]

APRIL 2023

Sub. Code: 2113

B.Sc. NUCLEAR MEDICINE TECHNOLOGY
SECOND YEAR (Regulations 2010-2011 & 2018-2019 onwards)
PAPER III – NUCLEAR MEDICINE TECHNIQUES AND
SPECIAL PROCEDURES
Q.P. Code: 802113

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Explain Myocardial Perfusion Scintigraphy with SPECT and PET.
2. Discuss Treatment Protocol, Pre Therapy, During Admission and Post Discharge precautions for I-131 ablation in Thyroid Cancer.
3. Explain the different phase in the Bone scan with clinical indication and Imaging protocol.

II. Write Notes on:

(8 x 5 = 40)

1. What are the methods of RBC labelling and its uses?
2. Difference between Ictal and Interictal SPECT study.
3. Myocardial viability studies.
4. Radiation Synovectomy Tracers.
5. Gastroesophageal Reflux studies.
6. Radiopharmaceuticals used for Brain Imaging and its Physical Characteristics.
7. Explain Lymphoscintigraphy.
8. Parathyroid Scintigraphy.

III. Short Answers on:

(10 x 3 = 30)

1. Pediatric dosage calculation.
2. How is ^{99m}Tc MDP is taken up by bones?
3. Cardiac Output and MUGA.
4. Mechanism of localization of Ga-68 psma and Dotanoc.
5. Precautions for breast feeding mother before Thyroid scan.
6. TARE.
7. Shunt evaluation.
8. TSH Stimulation test.
9. What are the cardiac PET agents and its Localization?
10. First Pass Cardiac Test.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0424]

APRIL 2024

Sub. Code: 2113

**B.Sc. NUCLEAR MEDICINE TECHNOLOGY
SECOND YEAR (Regulations 2010-2011 & 2018-2019 onwards)
PAPER III – NUCLEAR MEDICINE TECHNIQUES AND
SPECIAL PROCEDURES
*Q.P. Code: 802113***

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Describe in detail Pre, during and Post therapy Instructions for I-131 Therapy.
2. Describe in detail the Radionuclide, Pharmaceuticals, Applications and their properties used in Nuclear Medicine Procedures.
3. How do you Calibrate Gamma Ray Spectrometer?

II. Write Notes on:

(8 x 5 = 40)

1. Identification of unknown Radionuclide.
2. Bone Scintigraphy.
3. Advantages of ELISA over RIA study.
4. Gastro intestinal bleeding identifications
5. Can we do imaging using beta emitting Radionuclide - Justify.
6. Activity and Dosimetry of Renal Scan.
7. Can Children under 10 years undergo PET scan?
8. Intra Articular Therapy.

III. Short Answers on:

(10 x 3 = 30)

1. Monoclonal antibodies therapy
2. Principle of lung perfusion study.
3. NM Technologist role in patient positioning.
4. How do you convert Liquid Isotopes into Aerosols?
5. Indications of Renal scintigraphy.
6. Radio nuclides used for Liver Spleen Scintigraphy.
7. Thyrotoxicosis.
8. Patients preparation in CSF leak study.
9. Precautions to be followed for a pregnant patient imaging.
10. Dynamic imaging for bone scan

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 1125]

NOVEMBER 2025

Sub. Code: 2113

B.Sc. NUCLEAR MEDICINE TECHNOLOGY
SECOND YEAR (Regulations 2010-2011, 2016-2017 & 2018-2019 onwards)
PAPER III – NUCLEAR MEDICINE TECHNIQUES AND
SPECIAL PROCEDURES

Q.P. Code: 802113

Time: Three hours

Answer ALL Questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Describe Renal Radiopharmaceuticals, Diuretics renogram and cortical scintigraphy.
2. What Multigated Blood Pool Acquisition and explain first pass study.
3. Explain preparation, administration and post therapy care during high dose I-131 therapy.

II. Write Notes on:

(8 x 5 = 40)

1. Describe Sentinel lymph node in breast cancer.
2. Explain infection imaging and the various Radiopharmaceuticals used.
3. Explain the use of adenosine in Cardiac stress study.
4. What is Meckel's Diverticulum and how Meckel's scintigraphy is performed?
5. Explain how renal reflux study (DRCG) is performed.
6. Explain three phase bone scan and its indications.
7. Explain brain imaging Radiopharmaceuticals and its uses.
8. Explain how lung perfusion scintigraphy is performed.

III. Short Answers on:

(10 x 3 = 30)

1. What is GFR and ERPF.
2. What is the Radiopharmaceutical used for gastric emptying study?
3. What is the different between dynamic and static scan.
4. Name any two theranostic Radionuclide and why it is used?
5. What is the patient preparation done before Lu-177 DOTA therapy?
6. What is I-131 MIBG and where it is used?
7. Explain uptake mechanism of I-131 in thyroid.
8. What Hypokinesia, akinesia and dyskinesia in MUGA cardiac study?
9. What are the clinical indication of thyroid scan?
10. What is diuretics and where it is used? Explain F+0, F-15, F+15.
