

[LD 0212]

AUGUST 2013

Sub. Code: 1822

B.Sc. RADIOLOGY IMAGING TECHNOLOGY /

B.Sc. RADIO DIAGNOSIS TECHNOLOGY

THIRD YEAR

**PAPER II – MODERN IMAGING TECHNIQUES AND
RECENT TRENDS IN IMAGING**

Q.P. Code: 801822

Time : Three Hours

Maximum : 100 marks

Answer ALL questions

I. Elaborate on:

(3 x 10 = 30)

1. Describe mechanisms of radioactive decay in detail.
2. Describe interactions of gamma radiation with matter.
3. Principles and functions of PET/CT fusion technology.

II. Write notes on:

(8 x 5 = 40)

1. Gas-Filled Detectors.
2. Common radiopharmaceuticals and their uses in nuclear medicine.
3. Nuclear imaging in myocardial viability.
4. Compare features of three types of collimator which can be used with a Gamma Camera.
5. Units of radiation exposure.
6. Photomultiplier Tube.
7. Uses of SPECT in parathyroid imaging.
8. Tc99 bone scan.

III. Short Answers on:

(10 x 3 = 30)

1. What is radioactivity?
2. What is binding energy?
3. Inverse square law.
4. Mass Attenuation Coefficient.
5. Scintillation Detectors.
6. Difference between gamma rays and X rays.
7. Standardised uptake value (SUV).
8. Patient preparation for PET/CT scan.
9. Cyclotron.
10. Gastric emptying study.

[LE 0212]

FEBRUARY 2014

Sub. Code: 1822

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THIRD YEAR

**PAPER II – MODERN IMAGING TECHNIQUES AND
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Q.P. Code: 801822

Time : Three Hours

Maximum : 100 marks

Answer ALL questions

I. Elaborate on:

(3 x 10 = 30)

1. Describe interactions of gamma radiation with matter.
2. Principles and functions of Single Photon Emission Computed Tomography (SPECT).
3. What are the frequently performed nuclear medicine procedures in your department and their indications?

II. Write notes on:

(8 x 5 = 40)

1. Radioisotope Generator.
2. Non oncological indications of PET/CT.
3. Artifacts in PET-CT.
4. Briefly describe the basic principle of operation of gas-filled radiation detectors.
5. Nuclear imaging in myocardial perfusion.
6. NaF18 PET/CT.
7. Units of Radioactivity.
8. Structure of atom.

III. Short Answers on:

(10 x 3 = 30)

1. What are radioactive isotopes?
2. Indications for Tc99 bone scan.
3. Tracers used in infection imaging.
4. Parallel multi-hole collimator.
5. Detectors in PET/CT.
6. DMSA scan.
7. Decay Constant.
8. Attenuation correction in PET/CT.
9. Mass Attenuation Coefficient.
10. Patient preparation for PET/CT scan.

[LF 0212]

AUGUST 2014

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Q.P. Code: 801822

Time : Three Hours

Maximum : 100 marks

Answer ALL questions

I. Elaborate on:

(3 x 10 = 30)

1. Write in detail the Protocol for Isotope Myocardial Perfusion Study.
2. Discuss in detail the Techniques of FDG PET Imaging.
3. Discuss in detail the Fusion Imaging Techniques.

II. Write notes on:

(8 x 5 = 40)

1. Protocol for Isotope Renal Cortical Scan.
2. Write any five properties of Gamma-Rays.
3. Discuss the technique for Iodine 131 Therapy for Thyrotoxicosis.
4. Write briefly about Parathyroid scan in Nuclear Medicine.
5. Discuss about MR Guided focused ultrasound.
6. Radiopharmaceuticals used for Liver and Cardiac studies.
7. Discuss briefly the therapeutic application of Radionuclides.
8. Write briefly about Image guidance to therapeutic procedures.

III. Short Answers on:

(10 x 3 = 30)

1. Radiopharmaceuticals used for Tumor Imaging.
2. Define Radiopharmaceuticals.
3. Write a note GFR.
4. Write any three advantages of Radioisotope scan.
5. Define Perfusion in Renal Imaging.
6. Define Hybrid Technology.
7. What is MUGA?
8. Define static Planar Imaging.
9. Write the Isotope used in PET Imaging.
10. Define Fusion Imaging.

[LG 0215]

FEBRUARY 2015

Sub. Code: 1822

B.Sc. RADIOLOGY IMAGING TECHNOLOGY /

B.Sc. RADIO DIAGNOSIS TECHNOLOGY

THIRD YEAR

**PAPER II – MODERN IMAGING TECHNIQUES AND
RECENT TRENDS IN IMAGING**

Q.P. Code: 801822

Time : Three Hours

Maximum : 100 marks

Answer ALL questions

I. Elaborate on:

(3 x 10 = 30)

1. Discuss in detail the principle and working of a gamma camera.
2. Discuss in detail the principle and working of a PET CT scanner.
3. Discuss about various radiopharmaceuticals used in nuclear medicine.

II. Write notes on:

(8 x 5 = 40)

1. Radioisotope Generator.
2. Discuss about 2 radioisotopes used as a therapeutic agent in nuclear medicine.
3. Artifacts in PET-CT.
4. Briefly describe the basic principle of operation of gas-filled radiation detectors.
5. Nuclear imaging in myocardial perfusion.
6. NaF18 PET/CT.
7. MIBG scan.
8. Delay tank.

III. Short Answers on:

(10 x 3 = 30)

1. Name a few radioactive isotopes.
2. Photomultiplier tube.
3. What is binding energy?
4. Parallel multi-hole collimator.
5. Detectors in PET-CT.
6. DMSA scan.
7. Inverse square law.
8. Mass Attenuation Coefficient.
9. What is low dose CT?
10. What is invivo Dosimetry?

[LH 0815]

AUGUST 2015

Sub. Code: 1822

**B.Sc. RADIOLOGY IMAGING TECHNOLOGY /
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Q.P. Code: 801822

Time : Three Hours

Maximum : 100 marks

Answer ALL questions

I. Elaborate on:

(3 x 10 = 30)

1. Explain about Basic Design and Operating Principles Gamma Camera
2. How will you prepare and perform a patient for CT Guided Biopsy?
Explain the post procedure care.
3. Describe about How will you prepare a patient and perform scan in PET CT?

II. Write notes on:

(8 x 5 = 40)

1. Mr. Arthrogram.
2. Diffusion Tensor Imaging.
3. CT guided Radiofrequency Ablation.
4. Radiopharmaceuticals.
5. CT Enteroclysis.
6. Colour Doppler Imaging.
7. Cyclotron.
8. Modern dose Reduction methods in CT Scan imaging.

III. Short Answers on:

(10 x 3 = 30)

1. Iodine 131.
2. Atomic and Nuclear Structure.
3. MR Spectroscopy Applications.
4. Cone Beam CT Scan.
5. Tele-Radiology.
6. PACS.
7. Advantages of Digital Radiography.
8. Uses of Carbon dioxide in Radiology.
9. OPG.
10. Radiology information system (RIS).

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Q.P. Code: 801822

Time : Three Hours

Maximum : 100 Marks

Answer All questions.

I. Elaborate on :

(3 x 10 = 30)

1. Explain about Basic Design and Operating Principles PET-CT.
2. Explain basic cardiac imaging planning and myocardial viability study in MRI.
3. How MRI and USG is used to treat a patient with uterine fibroid?

II. Write notes on:

(8 x 5 = 40)

1. ^{99m}Tc generator.
2. Kinematic MRI.
3. C-Arm Application and Safety Aspects.
4. Virtual Colonoscopy.
5. Dual Source CT Scan.
6. CT Cisternogram.
7. Automatic Exposure Control System.
8. MR Stroke Protocol.

III. Short answers on:

(10 x 3 = 30)

1. Uses of DWI.
2. Contra indications to MRI Study.
3. Thyroid Uptake.
4. Bone scan.
5. Patient preparation for PET CT.
6. SPECT.
7. DEXA.
8. How Oxygen is supplied to critically ill patient in MRI suite?
9. CT guided procedures.
10. Cardiac PET.

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Q.P. Code: 801822

Time : Three Hours

Maximum : 100 Marks

Answer All questions.

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

1. Discuss in detail the principle and working of a gamma camera.
2. Discuss in detail the principle and working of a PET CT scanner.
3. Discuss about various radiopharmaceuticals used in nuclear medicine.

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

1. Radioisotope Generator.
2. Discuss about 2 radioisotopes used as a therapeutic agent in nuclear medicine.
3. Artifacts in PET-CT.
4. Briefly describe the basic principle of operation of gas-filled radiation detectors.
5. Nuclear imaging in myocardial perfusion.
6. NaF18 PET/CT.
7. MIBG scan.
8. Delay tank.

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

1. Name a few radioactive isotopes.
2. Photomultiplier tube.
3. What is binding energy?
4. Parallel multi-hole collimator.
5. Detectors in PET-CT.
6. DMSA scan.
7. Inverse square law.
8. Mass Attenuation Coefficient.
9. What is low dose CT?
10. What is invivo Dosimetry?

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THIRD YEAR

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Q.P. Code: 801822

Time : Three Hours

Maximum : 100 Marks

Answer All questions.

I. Elaborate on :

(3 x 10 = 30)

1. Discuss in detail the radioisotopes used in diagnostic and therapeutic nuclear medicine.
2. Describe about the mechanism of radioactive decay.
3. Discuss about radiation safety in nuclear medicine.

II. Write notes on:

(8 x 5 = 40)

1. Cyclotron.
2. PET-CT imaging fusion.
3. Filtered back projection.
4. Artefacts in CT.
5. Nuclear imaging in myocardial perfusion.
6. Low pass and high pass filter.
7. Discuss on how to handle radiopharmaceuticals?
8. Rectilinear scanner.

III. Short answers on:

(10 x 3 = 30)

1. Units of radioactivity.
2. Photomultiplier tube.
3. Contamination monitor.
4. Fan beam collimator.
5. Name a few radioactive isotopes.
6. GFR.
7. Secular equilibrium.
8. Molybdenum generator.
9. What is low dose CT?
10. Reactor produced radionuclides.

[LL 0817]

AUGUST 2017

Sub. Code: 1822

B.Sc. RADIOLOGY IMAGING TECHNOLOGY

THIRD YEAR

**PAPER II – MODERN IMAGING TECHNIQUES AND
RECENT TRENDS IN IMAGING**

Q.P. Code: 801822

Time: Three Hours

Maximum: 100 Marks

Answer all questions

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

1. Explain the procedure in preparing a patient and performing scan in PET CT.
2. Write in detail the principle and working of a gamma camera.
3. Explain basic cardiac imaging, planning and myocardial viability study in MRI.

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

1. Write about CT guided Radiofrequency Ablation.
2. Explain about Nuclear imaging in myocardial perfusion.
3. Write in detail about Radiopharmaceuticals.
4. Explain about NaF18 PET/CT.
5. Explain about Filtered back projection.
6. What is the Automatic Exposure Control System?
7. Write about Dual Source CT Scan.
8. Explain in detail about MIBG scan.

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

1. Explain about PACS.
2. Write about the Radiology information system (RIS).
3. Explain about DMSA scan.
4. List a few radioactive isotopes.
5. What are the indications for Tc99 bone scan?
6. List the strengths and limitations of MRI.
7. List characteristics of malignant lesions.
8. What are the advantages and limitations of sonomammography procedure?
9. Define Perfusion in Renal Imaging.
10. Write about Contamination monitor.

[LM 0218]

FEBRUARY 2018

Sub. Code: 1822

B.Sc. RADIOLOGY IMAGING TECHNOLOGY

THIRD YEAR

**PAPER II – MODERN IMAGING TECHNIQUES AND
RECENT TRENDS IN IMAGING**

Q.P. Code: 801822

Time: Three Hours

Maximum: 100 Marks

Answer all questions

I. Elaborate on:

(3 x 10 = 30)

1. Explain in detail the principle and working of a PET CT scanner.
2. Write in detail about how MRI and USG is used to treat a patient with uterine fibroid.
3. Explain in detail about the Fusion Imaging Techniques.

II. Write notes on:

(8 x 5 = 40)

1. Write about Dual Source CT Scan.
2. Write any five properties of Gamma-Rays.
3. Explain the working of a gamma camera.
4. List the Non oncological indications of PET/CT.
5. Write about the uses of SPECT in parathyroid imaging.
6. Write in detail about Colour Doppler Imaging.
7. What is Kinematic MRI? Explain.
8. Discuss on how to handle radiopharmaceuticals?

III. Short answers on:

(10 x 3 = 30)

1. Write about DEXA.
2. Explain about Thyroid Uptake.
3. List the uses of Carbon dioxide in Radiology.
4. What is low dose CT?
5. What are the Radiopharmaceuticals used for Tumor Imaging?
6. Explain about Gastric emptying study.
7. Explain about dynamic MRI studies.
8. List advantages of sonomammography procedure.
9. List characteristics of benign lesions.
10. What are the advantages of MRI?

[LN 0818]

AUGUST 2018

Sub. Code: 1822

B.Sc. RADIOLOGY IMAGING TECHNOLOGY

THIRD YEAR

**PAPER II – MODERN IMAGING TECHNIQUES AND
RECENT TRENDS IN IMAGING**

Q.P. Code: 801822

Time: Three Hours

Maximum: 100 Marks

Answer all questions

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

1. Write in detail the Fusion Imaging Techniques.
2. Explain the preparation, procedure and post procedure care for CT guided biopsy.
3. Explain in detail the principle and working of a gamma camera.

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

1. List the C-Arm Application and Safety Aspects.
2. Explain about Radiopharmaceuticals used for Liver and Cardiac studies.
3. Write about MR Stroke protocol.
4. Explain about Radioisotope Generator.
5. Write about Tc99 bone scan.
6. Write about image guidance to therapeutic procedures.
7. Explain about Diffusion Tensor Imaging.
8. Write about the modern dose Reduction methods in CT Scan imaging.

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

1. What is SPECT? Explain.
2. Procedure of patient preparation for PET CT.
3. What are the Contraindications to MRI Study?
4. What are the advantages of Digital Radiography?
5. Write about Mass Attenuation Coefficient.
6. What is Fusion Imaging?
7. Write about Parallel multi-hole collimator.
8. Explain about dynamic CT studies.
9. List limitations of sonomammography procedure.
10. What are the limitations of MRI?
