[LD 0212] **AUGUST 2013** **Sub. Code: 1821**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY /

B.Sc. RADIO DIAGNOSIS TECHNOLOGY

THIRD YEAR

PAPER III – EQUIPMENTS OF MODERN IMAGING MODALITIES

Q.P. Code: 801821

Time : Three Hours **Maximum : 100 marks**

Answer ALL questions

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

1. Discuss in detail the various generations of the CT scanners. Add a note on the advantages of the multidetector CT over conventional CT.
2. Describe in detail the various parts of a mammography equipment.
3. Describe an Ultrasound transducer with adequate diagrams.
   Enumerate the various types of Ultrasonography transducers.

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

1. What is Larmor frequency?
2. Describe the technique of CT angiography.
3. Discuss the principle of Computed Radiography system.
4. Describe the techniques of MR mammography.
5. Enumerate the various interactions of Ultrasound waves with matter.
6. List the newer MR contrast agents.
7. Principle of CT enteroclysis & comparison of the same with conventional enteroclysis.
8. Artefacts encountered during MR imaging.

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

1. Reverberation artefact in ultrasonography.
2. Phosphors used in modern screens.
3. Basic principles of Positron Emission Tomography (PET).
4. Patient preparation & techniques of Magnetic Resonance Cholangio Pancreatography.
5. Techniques of CT cisternography.
6. Patient positioning and sequences in MR shoulder imaging.
7. High frequency X-Ray machines.
8. Basic principles of Doppler imaging.
9. What is wrap around artefact in MR? how can you avoid the same?
10. Note on virtual bronchoscopy.

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[LE 0212] **FEBRUARY 2014** **Sub. Code: 1821**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY /

B.Sc. RADIO DIAGNOSIS TECHNOLOGY

THIRD YEAR

PAPER III – EQUIPMENTS OF MODERN IMAGING MODALITIES

Q.P. Code: 801821

Time : Three Hours **Maximum : 100 marks**

Answer ALL questions

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

1. Discuss in detail the Digital Radiography. Also explain the advantages of digital radiography over conventional radiography.
2. Explain the basic principle of ultrasonography. Add a note on the range of frequencies used in imaging of various parts of body.
3. Classify the CT contrast agents. Add a note on the dose, various routes of administration and management of contrast reactions.

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

1. Role of multi detector CT in dental imaging.
2. MRI of the orbits – techniques and sequences.
3. Describe image intensifier tube with diagram.
4. Photomultiplier tube.
5. Image processing in Computed Radiography system.
6. What is radiofrequency pulse? Add a note on chemical shift imaging.
7. Describe modern X ray tube design.
8. Techniques of CT pulmonary angiography.

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

1. Compare conventional mammography with digital mammography.
2. Recent advanced in ultrasonography.
3. Volume rendering technique in computed tomography.
4. Various filters used in X- ray imaging.
5. Role of ultrasound in obstetrics.
6. Depth resolution in ultrasonography.
7. Proton Density Weighted imaging and its applications.
8. MR angiography techniques.
9. Picture Archiving and communication system.
10. Note on intensifying screens.

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[LF 0212] **AUGUST 2014** **Sub. Code: 1821**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY /

B.Sc. RADIO DIAGNOSIS TECHNOLOGY

THIRD YEAR

PAPER III – EQUIPMENTS OF MODERN IMAGING MODALITIES

Q.P. Code: 801821

Time : Three Hours **Maximum : 100 marks**

Answer ALL questions

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

1. Image formation in MRI.
2. Describe with neat diagram the basic principle of Mammographic equipment.
3. Explain about image reconstruction in CT. Give an account on multislice CT.

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

1. Indirect DR system.
2. CR image reader.
3. Contrast media used in MRI.
4. Ultrasound transducer.
5. Spin echo sequence.
6. Contrast media used in CT.
7. CT thorax: exposure factors and technique.
8. T2w imaging.

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

1. B mode in ultrasound.
2. Quadrature body coil.
3. TR and TE.
4. Phased array transducer.
5. Tomography.
6. Pitch.
7. CR image phosphor.
8. CT cholangiography.
9. Volume rendering.
10. Surface shaded display.

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[LG 0215] **FEBRUARY 2015** **Sub. Code: 1821**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY /

B.Sc. RADIO DIAGNOSIS TECHNOLOGY

THIRD YEAR

PAPER III – EQUIPMENTS OF MODERN IMAGING MODALITIES

Q.P. Code: 801821

Time : Three Hours **Maximum : 100 marks**

Answer ALL questions

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

1. Explain the working, and reconstruction of computed tomography images.
2. Discuss about radiofrequency coils. Explain about various signal encoding for image formation in MRI.
3. Describe an Ultrasound transducer with adequate diagrams. Enumerate the various types of Ultrasonography transducers.

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

1. Spin echo sequence.
2. Contrast agents used in CT.
3. Interaction of ultrasound with matter.
4. Explain about how image is formed in computed radiography.
5. Explain in detail about indirect flat panel detectors.
6. Discuss about any 3 artefacts in MRI.
7. Mammography machine.
8. Factors affecting image quality in MRI.

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

1. Ring artifacts.
2. Flip angle.
3. Gadolinium as contrast medium.
4. Tomography.
5. Piezo-electric effect.
6. CT number.
7. Gradient coil.
8. Phosphor used in CR plates.
9. Focused transducer.
10. Filtration in x-ray imaging.

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[LH 0815] **AUGUST 2015** **Sub. Code: 1821**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY /

RADIO DIAGNOSIS TECHNOLOGY

THIRD YEAR

PAPER I – EQUIPMENTS OF MODERN IMAGING MODALITIES

Q.P. Code: 801821

Time : Three Hours **Maximum : 100 marks**

Answer ALL questions

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

1. Explain in detail the Signal encoding steps in MR imaging.
2. Describe about the various flat panel detectors in x-ray imaging
3. Discuss the basic principle and reconstruction algorithms in CT imaging.

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

1. Spin echo sequence.
2. CR artefacts.
3. Superconductive magnet.
4. Multi detector CT.
5. Basic principle of Doppler imaging.
6. Discuss about 3 artefacts in MRI.
7. Contrast agents used in CT.
8. Factors affecting image quality in computed radiography.

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

1. Piezo electric effect.
2. TR and TE.
3. T2w imaging.
4. Tomography.
5. Scintillation detector.
6. B mode in ultrasound.
7. AEC.
8. CTDI.
9. MIP and MPR.
10. Larmour frequency.

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[LI 0216] FEBRUARY 2016 **Sub Code: 1821**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY /
RADIO DIAGNOSIS TECHNOLOGY

THIRD YEAR

PAPER I – EQUIPMENTS OF MODERN IMAGING MODALITIES

Q.P. Code: 801821

Time : Three Hours **Maximum : 100 Marks**

Answer All questions.

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

1. Explain the working of a CT scanner. Discuss about various generations of CT.
2. Explain in detail the working of a Mammography machine.
3. Describe in detail the function of a digital subtraction angiography machine.

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

1. Spin echo sequence.
2. Image intensifier.
3. Direct digital Radiography system.
4. Computed Radiography reader.
5. Ultrasound transducer.
6. Discuss about any 3 artefacts in MDCT.
7. Doppler effect.
8. T2w imaging.

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

1. Acoustic coupling.
2. Flip angle.
3. Gadolinium as contrast medium.
4. Shimming.
5. RF coils.
6. CT number.
7. Gradient coil.
8. Anode heel effect.
9. Focused transducer.
10. Bowtie filter.

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[LJ 0816] AUGUST 2016 **Sub Code: 1821**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY / RADIO DIAGNOSIS TECHNOLOGY

THIRD YEAR

PAPER I – EQUIPMENTS OF MODERN IMAGING MODALITIES

Q.P. Code: 801821

Time : Three Hours **Maximum : 100 Marks**

Answer All questions.

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

1. Explain in detail the various generations of CT.
2. Describe in detail about the mammography equipment.
3. Explain in detail the Physical principle of MRI.

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

1. Explain scintillation detector used in CT.
2. Explain the principle of PET-CT.
3. Explain Fraunhoffer Zone in Ultrasound.
4. What are the viewing conditions for mammography films?
5. Explain fifth generation CT.
6. Explain the principle of Doppler effect in Ultrasound.
7. Explain dose length product in CT.
8. Explain the Physical properties of Ultrasound.

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

1. What is piezo electric effect?
2. Explain larmour frequency in MRI.
3. Define mass attenuation coefficient.
4. Define Voxel.
5. What is the basic principle of DSA?
6. What are the uses of PACS?
7. What are the types of image reconstruction in CT?
8. Explain screen film system in mammography.
9. What is F.I.D in MRI?
10. What are the advantages of PET-CT?

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[LK 0217] FEBRUARY 2017 **Sub Code: 1821**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY / RADIO DIAGNOSIS TECHNOLOGY

THIRD YEAR

PAPER I – EQUIPMENTS OF MODERN IMAGING MODALITIES

Q.P. Code: 801821

Time : Three Hours **Maximum : 100 Marks**

Answer All questions.

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

1. Explain CT artifacts in detail.
2. Explain about MRI equipment.
3. Explain interaction of Ultrasound with matter, and different display modes in Ultrasound.

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

1. Explain spiral CT.
2. Explain xenon gas detectors in CT.
3. Explain CT windowing.
4. Explain the construction of Ultrasound transducer.
5. Various pulse sequence in MRI.
6. Explain the physical principle of mammography machine.
7. Principle of PET-CT.
8. Explain types of transducers used in Ultrasound.

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

1. What is FID in MRI?
2. Explain larmour frequency in MRI.
3. Define pixel in CT.
4. Explain Piezo electric effect.
5. Uses of PACS.
6. Principle of DSA.
7. Define mass attenuation co efficient.
8. Bio effects of MRI.
9. Gradient coils in MRI.
10. What are the advantages of PET-CT?

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[LL 0817] AUGUST 2017 **Sub Code: 1821**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY / RADIO DIAGNOSIS TECHNOLOGY

THIRD YEAR

PAPER I – EQUIPMENTS OF MODERN IMAGING MODALITIES

Q.P. Code: 801821

Time : Three Hours **Maximum : 100 Marks**

Answer All questions.

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

1. Describe various types of magnets in use for clinical MRI machines. Discuss about any three MRI artefacts and its Remedies.
2. Describe Computed Radiography Cassette with adequate diagrams. Image processing in Computed Radiography system.
3. Enumerate in Detail about various Generations of CT.

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

1. Mammographic X-ray tube.
2. Techniques of fat suppression in MRI.
3. PACS – picture archiving and communication system.
4. MR angiography techniques.
5. Bowtie filter.
6. Ultrasound transducer.
7. CT artefacts.
8. Indirect DR system.

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

1. Larmor Frequency.
2. Tissue Harmonic Imaging in Ultrasound.
3. Quadrature body coil.
4. Volume rendering.
5. Piezo-electric effect.
6. Flip angle.
7. Scintillation detector.
8. Doppler effect.
9. Anode heel effect.
10. Types of image reconstruction in CT.

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[LM 0218] FEBRUARY 2018 **Sub Code: 1821**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY

THIRD YEAR

PAPER I – EQUIPMENTS OF MODERN IMAGING MODALITIES

Q.P. Code: 801821

Time : Three Hours **Maximum : 100 Marks**

Answer All questions.

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

1. Elaborate in detail about signal encoding and Image formation in MRI.
2. Describe in detail the parts of Mammography machine with Neat diagrams.
3. Parts of Ultrasound transducer with adequate diagrams. Enumerate the various types of Ultrasonography transducers.

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

1. Superconducting Magnets.
2. Image processing in Computed Radiography system.
3. Contrast agents used in CT.
4. Radiofrequency Coils.
5. Image Reconstruction algorithms in CT.
6. Inversion Recovery (IR) Sequence.
7. Direct digital Radiography system
8. Interactions of Ultrasound with Matter

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

1. Photomultiplier Tube.
2. CT number.
3. Dixon method of Fat suppression.
4. Tissue Harmonic Imaging.
5. Pitch.
6. Echo Planar Imaging (EPI).
7. Surface Shaded Display.
8. Gadolinium as contrast medium.
9. Phosphor used in CR plates.
10. B Mode in Ultrasound.

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[LN 0818] AUGUST 2018 **Sub. Code: 1821**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY
THIRD YEAR
PAPER I – EQUIPMENTS OF MODERN IMAGING MODALITIES

Q.P. Code: 801821

Time: Three Hours **Maximum: 100 Marks**

Answer all questions

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

1. Describe principles and functions of PET-CT.
2. Describe and detail about myocardial perfusion study.
3. Explain in detail CT guided biopsy and about its post procedure care.

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

1. CT Enteroclysis.
2. Dual source CT scan.
3. Cone Beam CT.
4. C-ARM application.
5. MRI artefacts.
6. CT and MR Myelogram technique.
7. PACS.
8. MR Elastography technique and application.

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

1. Tele Radiology.
2. Low Dose CT.
3. GFR.
4. Properties of X rays.
5. Patient preparation for PET-CT.
6. Define Radioisotopes.
7. SPECT.
8. Inverse square law.
9. DEXA.
10. 3D CT TYPES.

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