[KZ 0811] **AUGUST 2011** **Sub. Code: 1803**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY / RADIO DIAGNOSIS TECHNOLOGY

FIRST YEAR

PAPER III – RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code: 801803

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

Answer ALL questions

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

1. Structure and working of modern diagnostic x-ray tube.
2. Basic principle of CT.
3. Principles of MRI.

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

1. Superconducting magnet.
2. Focal spot.
3. High frequency generator.
4. Spiral CT.
5. Principles of ultrasound.
6. Principle of mammography.
7. Computed radiography system.
8. Different types of transducers.

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

1. Focusing Grid.
2. Autotransformers.
3. Half wave rectification.
4. Cooling of rotating anode tube.
5. CT number.
6. Piezoelectric effect.
7. What is a Tesla?
8. What is a high and low field strength MRI?
9. Interaction of ultrasound with matter.
10. Factors affecting MRI image quality.

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[LA 0212] **FEBRUARY 2012** **Sub. Code: 1803**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY / RADIO DIAGNOSIS TECHNOLOGY

FIRST YEAR

PAPER III – RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code: 801803

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

Answer ALL questions

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

1. Physical principles of CT scan equipment.
2. Draw labeled diagram and describe modern rotating anode X- ray tube.
3. What are transformers? Describe different types of transformers and sources of power loss in transformers.

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

1. Factors affecting signal noise ratio.
2. Characteristics of ultrasound.
3. Principles of mammography.
4. Computed radiography vs digital radiography.
5. KV control unit.
6. Construction of ultrasound probe.
7. Circuit diagram of X-ray generator.
8. Superconducting magnet.

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

1. Different generations of CT.
2. Hounsfield Number.
3. Full wave rectification.
4. Piezo electric effect.
5. What is signal intensity?
6. Write different basic MRI sequences.
7. What is Doppler Effect?
8. Ammeter.
9. How is ultrasound generated?
10. How are dense structures displayed on CT? How are less dense structures displayed on CT?

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[LB 0212] **AUGUST 2012** **Sub. Code: 1803**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY / RADIO DIAGNOSIS TECHNOLOGY

FIRST YEAR

PAPER III – RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code: 801803

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

Answer ALL questions in the same order.

I. Elaborate on:	**Pages (Max.)**	**Time (Max.)**	**Marks (Max.)**
1. Factor affecting image quality of radiograph.	7	20 min.	10
2. Types of grids and its effect on image quality.	7	20 min.	10
3. First generation CT.	7	20 min.	10
II. Write notes on:			
1. mAs.	4	10 min.	5
2. Gamma camera.	4	10 min.	5
3. Chest X-Ray PA view.	4	10 min.	5
4. Type of magnets used in MRI.	4	10 min.	5
5. Portable X-Ray – Advantages and Disadvantages.	4	10 min.	5
6. Ultrasonography.	4	10 min.	5
7. Focal spot.	4	10 min.	5
8. Cones & diaphragms.	4	10 min.	5
III. Short answers on:			
1. Barium sulphate.	2	4 min.	3
2. CT contrast media.	2	4 min.	3
3. CT number.	2	4 min.	3
4. Spiral CT.	2	4 min.	3
5. Fluoroscopy.	2	4 min.	3
6. Doppler effect.	2	4 min.	3
7. Breast imaging.	2	4 min.	3
8. Radiation protection.	2	4 min.	3
9. Lead apron.	2	4 min.	3
10. Control panel of radiographic equipment.	2	4 min.	3

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[LC 0212] **FEBRUARY 2013** **Sub. Code: 1803**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY /
RADIO DIAGNOSIS TECHNOLOGY

FIRST YEAR

PAPER III – RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code: 801803

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

Answer ALL questions

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

1. Self rectifying circuits.
2. Factors affecting X-ray Image quality.
3. EMI Scanner.

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

1. Thermionic emission.
2. Focal spot.
3. Control Panel of X-ray equipment .
4. Attenuation of X-rays.
5. Spiral CT.
6. Advantages of DR over CR.
7. CT Detectors.
8. Mammography.

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

1. kVp.
2. Houns Field Units.
3. Bucky .
4. Rotating Anode .
5. Advantages of MR over CT.
6. Super conducting Magnets.
7. What is Tesla?
8. CT contrast Media.
9. Doppler Effect.
10. Piezo electric effect.

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[LD 0212] **AUGUST 2013** **Sub. Code: 1803**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY / RADIO DIAGNOSIS TECHNOLOGY

FIRST YEAR

PAPER III – RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code: 801803

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

Answer ALL questions

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

1. What is the principle computed tomography and explain about different generation of CT scanner
2. Describe in detail about mA circuit and kVp circuit with neat diagram and their function in X- ray circuit.
3. What is the principle of ultrasound scan and describe the method of production of ultrasound and their physical characteristics.

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

1. Half wave rectification.
2. X-ray tube shield.
3. Types of magnet used in MRI scan.
4. Difference between CNR and SNR.
5. Longitudinal relaxation and spin-spin relaxation.
6. High frequency generator.
7. X- ray detectors.
8. What is routine maintenance.

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

1. Define velocity, give the value of velocity of sound in soft tissue.
2. Filament current.
3. Tube rating.
4. CT dose index.
5. Piezoelectric effect.
6. How will you manage collimator light field has insufficient brightness.
7. Automatic exposure control.
8. Triode valves.
9. Chemical shift.
10. Contrast agent used in MRI scan.

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[LE 0212] **FEBRUARY 2014** **Sub. Code: 1803**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY / RADIO DIAGNOSIS TECHNOLOGY

FIRST YEAR

PAPER III – RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code: 801803

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

Answer ALL questions

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

1. Describe the construction and working of a modern rotating X-ray Tube.
2. Explain in Detail about the various Generations of CT Scan.
3. Explain in detail about the various interactions of Ultrasound and different display modes.

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

1. Full wave Rectifier.
2. X-ray Generator Circuit.
3. mA circuit.
4. Flat panel detector.
5. Spiral CT.
6. Principles of computerized Radiography.
7. Super conducting magnets.
8. X-ray Beam quality.

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

1. Power loss in transformer.
2. Advantage of rotating anode x-ray tube.
3. Focusing cup.
4. CT numbe.
5. Contrast medium.
6. Define Tesla.
7. Doppler Effect.
8. Physical properties of Ultrasound.
9. Compare the merits and demerits and CR and DR.
10. Focal spot.

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[LF 0212] **AUGUST 2014** **Sub. Code: 1803**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY

FIRST YEAR

PAPER III – RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code: 801803

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

Answer ALL questions

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

1. Discuss the principle and function of computed tomography scanner (CT Scan).
2. Explain a Rotating anode X-ray tube with diagram.
3. Discuss MR Imaging sequences.

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

1. Half Wave Rectifier.
2. Ultrasound transducer.
3. T1 Relaxation time.
4. AC Generator.
5. KV Control Circuit.
6. Artifacts in CT scanner.
7. Computed Radiography System.
8. Mammography.

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

1. Why vaccum is required in a X-ray tube?
2. What is line focus?
3. What is quality and quantity of X-rays?
4. Name two detectors in CT Scan.
5. Name the crystal used in ultrasound.
6. Name two artifacts in MRI.
7. Why compression is required in Mammography?
8. What is delta and Why connections?
9. Name two semi conductor materials.
10. Why tungsten is used as target material?

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[LG 0215] **FEBRUARY 2015** **Sub. Code: 1803**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY /
RADIO DIAGNOSIS TECHNOLOGY

FIRST YEAR

PAPER III – RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code: 801803

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

Answer ALL questions

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

1. Explain the principle and function of a transformer.
2. Explain the principle of ultrasound scanner.
3. Discuss the computed Radiography system.

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

1. Diode.
2. Transformer loses.
3. MRI signal.
4. X-ray Generator circuit.
5. CT Image Quality.
6. Half Valve layer.
7. MRI magnet.
8. Interaction of ultra sound.

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

1. What is thermionic emission?
2. What is Heel effect?
3. Define nipple factor.
4. What is piezo electric effect?
5. List the advantages of 3-phase generator.
6. Why Hydrogen is used for MR Imaging?
7. Write the Larmor equation.
8. What is CT number?
9. Name the target materials used in Mammography.
10. List the advantages of digital radiography.

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[LH 0815] **AUGUST 2015** **Sub. Code: 1803**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY

FIRST YEAR

PAPER III – RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code: 801803

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

Answer ALL questions

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

1. Draw simple x-ray circuit and explain why each part is located there.
2. Describe in detail, the various types of digital radiography.
3. Describe in detail, the principle of CT with various generations.

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

1. High frequency x-ray generator circuit.
2. Theory of semiconductor diode.
3. Principle of computed radiography.
4. Mammographic x-ray tube.
5. Half wave rectification.
6. Thin film Transistor.
7. Line focus principle.
8. Anode heel effect and factors affecting it.

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

1. Filtration.
2. Cooling in rotating anode x-ray tube.
3. Contrast Media.
4. Forward Bias.
5. Autotransformer.
6. Automatic exposure control.
7. Anode heel effect.
8. Self rectifier.
9. Advantages of digital radiography.
10. X-ray tube rating.

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[LI 0216] FEBRUARY 2016 **Sub Code: 1803**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY

FIRST YEAR

PAPER III – RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code: 801803

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

Answer All questions.

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

1. Describe with neat circuit diagram, kV control circuit and explain the function of each part.
2. What is the physics behind mammography and explain the construction of mammographic x-ray tube?
3. Describe how ultrasound image is formed and explain various modes of ultrasound imaging.

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

1. Half wave rectification.
2. Principle of computed radiography.
3. Digital radiography with CCD detectors.
4. Various generations of CT.
5. Detectors used in CT.
6. Types of magnet used in MRI scan.
7. T1 weighted imaging.
8. Forward Bias and Reverse Bias.

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

1. Anode Heel effect.
2. X-ray tube rating.
3. Advantages of digital radiography.
4. Self rectifier.
5. Characteristic x-rays.
6. Piezoelectric effect.
7. CT number.
8. Larmor frequency.
9. Grid.
10. Factors affecting x-ray beam quality.

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[LJ 0816] AUGUST 2016 **Sub Code: 1803**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY / RADIO DIAGNOSIS TECHNOLOGY

FIRST YEAR

PAPER III – RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code: 801803

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

Answer All questions.

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

1. Explain in detail the basic imaging concepts in CT imaging.
2. Describe about the various flat panel detectors in x-ray imaging.
3. Describe in detail the various parts of a mammography equipment.

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

1. Image intensifier.
2. CR reader.
3. Stationary anode xray tube.
4. Vidicon camera.
5. Dental radiography.
6. Discuss about 3 artefacts in CT.
7. OPG.
8. Tube rating chart.

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

1. Linear attenuation co-efficient.
2. Grid controlled xray tube.
3. Integrated timer.
4. Tomography.
5. CTDI.
6. Fluoroscence.
7. Angiography.
8. Effective dose.
9. Absorbed dose.
10. Filtration in xray imaging.

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[LK 0217] FEBRUARY 2017 **Sub Code: 1803**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY / RADIO DIAGNOSIS TECHNOLOGY

FIRST YEAR

PAPER III – RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code: 801803

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

Answer All questions.

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

1. Explain the quality assurance test in fluoroscopy equipment.
2. Explain about conventional fluoroscopy. With neat diagram explain the function of image intensifier.
3. With neat diagram explain the rotating anode xray tube.

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

1. Spinning top test.
2. Stationary anode xray tube.
3. DSA.
4. MDCT.
5. Indirect flat panel detectors.
6. CR cassette.
7. Direct flat panel detector.
8. Factors affecting image quality in Conventional radiography.

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

1. Inherent filtration.
2. Ionisation chamber.
3. Automatic exposure control.
4. Luminescence.
5. DAP meter.
6. CT number.
7. Scintillation detector.
8. Multisection cassette.
9. Heat unit.
10. Filtration in xray imaging.

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[LL 0817] AUGUST 2017 **Sub. Code: 1803**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY

FIRST YEAR

PAPER III – RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code: 801803

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

Answer all questions

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

1. Explain in detail different types of digital radiography.
2. Name the different equipments used in dental radiography. Write in detail about ortho pantomogram.
3. What are the different types of X-ray tubes? Explain stationary anode tube with neat labeled diagram.

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

1. CR cassette reader.
2. Image intensifying screen.
3. Describe the properties of tungsten.
4. Beam restrictors.
5. Types of grids and its uses.
6. Exposure control devices.
7. Principle of tomography.
8. Factors determining image quality.

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

1. Half value layer.
2. Filament circuit.
3. Air gap technique.
4. Added filtration.
5. What is DSA?
6. Tube rating.
7. Linear attenuation co-efficient.
8. Types of circuits in X-ray tube.
9. Target material in mammogram.
10. Semi-conductor.

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[LM 0218] FEBRUARY 2018 **Sub. Code: 1803**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY

FIRST YEAR

PAPER III – RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code: 801803

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

Answer all questions

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

1. Explain with a neat diagram rotating anode X-ray tube.
2. What are the different generations of CT scanners? Explain first generation CT in detail?
3. What is PACS? Explain its functioning and advantages.

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

1. Rectifiers.
2. CR cassette.
3. Characteristic radiation.
4. KVP, MAS.
5. What id Bucky? What is its advantage?
6. Types of X-ray generators.
7. Types of digital radiography.
8. Principle of CT.

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

1. What is heel effect?
2. What are the methods of heat dissipation in X-ray machine?
3. What are collimators?
4. Compound filters.
5. Why is compression used in mammography?
6. Air gap technique.
7. Automatic exposure control.
8. What if fluoroscopy?
9. Different methods of filtration in X-ray tube.
10. Semiconductor materials.

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[LN 0818] AUGUST 2018 **Sub. Code: 1803**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY

FIRST YEAR

PAPER III – RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code: 801803

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

Answer all questions

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

1. Describe in detail the various parts of mammography equipment.
2. Explain the structure and functioning of image intensifier tube.
3. Explain the properties of X-rays. Explain construction of X-ray tube.

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

1. Beam restrictors.
2. Three phase generator.
3. Scatter radiation.
4. Step up and step down transformers.
5. Automatic exposure control.
6. CR cassette reader.
7. Intensifying screens.
8. Fluoroscopy.

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

1. Semi-conductor materials.
2. Anode angle.
3. Air gap technique.
4. Focal spot.
5. Principle of tomography.
6. Types of DR.
7. Thermionic emission.
8. Properties of tungsten.
9. Linear attenuation co-efficient.
10. Anode heel effect.

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[LO 0219] FEBRUARY 2019 **Sub. Code: 1803**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY

FIRST YEAR

PAPER III – RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code: 801803

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

Answer all questions

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

1. Describe in detail about the construction and working of modern X-ray tube.
2. Describe in detail, the construction and working of image intensifier.
3. Describe in detail, the various generations in Computerised Tomography.

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

1. Line focus principle.
2. Beam limiting devices.
3. Dental x-ray unit.
4. Principle of Computed Radiography.
5. Direct Digital Radiography.
6. Mammographic X-ray tube.
7. Principle of X-ray tomography.
8. Principle of DSA.

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

1. Anode Heel Effect.
2. Thermionic Emission.
3. Radiation Safety in Mobile X-ray unit.
4. Fluorescent Screen.
5. Dark adaptation in fluoroscopy.
6. Orthopantomography.
7. Advantages of compression in mammography.
8. CT Number.
9. Various types of tomographic movement.
10. PACS.

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[LP 0819] AUGUST 2019 **Sub. Code: 1803**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY

FIRST YEAR

PAPER III – RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code: 801803

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

Answer all questions

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

1. Describe in detail, the various types of digital radiography.
2. Describe with neat diagram, the construction and working of rotating anode X-ray tube.
3. Describe the construction of CT equipment.

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

1. Grid Control X-ray tube.
2. Direct vision fluoroscopy.
3. Portable X-ray unit.
4. Why tungsten is used as target material in x-ray tube?
5. Image intensifier tube.
6. CR reader.
7. Scatter radiation.
8. Conventional X-ray tomography.

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

1. Space Charge effect.
2. X-ray tube housing.
3. Automatic Brightness Control.
4. Spot film device.
5. Photostimulated luminescence.
6. Advantages of compression in mammography.
7. PACS.
8. OPG.
9. Multisection Cassette.
10. CT Number.

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[LQ 0220] FEBRUARY 2020 **Sub. Code: 1803**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY

FIRST YEAR

PAPER III – RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code: 801803

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

Answer all questions

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

1. Discuss in detail about the physical principle of computed radiography.
2. Describe in detail, the construction of mammographic x-ray equipment.
3. Describe in detail, the physical properties behind image formation in CT.

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

1. Filtration in radiography.
2. Anode heel effect.
3. Heat dissipation in rotating anode x-ray tube.
4. Mobile x-ray unit.
5. Direct vision fluoroscopy.
6. Direct digital radiography.
7. Spinning top test.
8. Generation of CT.

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

1. Anode angle.
2. Space charge effect.
3. Why tungsten is used as target material in x-ray tube?
4. CT number.
5. Fluorescence.
6. Automatic brightness control.
7. Advantages of digital radiography.
8. Charge coupled device.
9. Beam hardening artifact.
10. Basic principle of DSA.

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

[AHS 0321] MARCH 2021 Sub. Code: 1803

(AUGUST 2020 EXAM SESSION)

B.Sc. RADIOLOGY IMAGING TECHNOLOGY

FIRST YEAR (Regulations 2010-2011 & 2014-2015)

PAPER III – RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code : 801803

Time: Three hours **Answer ALL Questions** **Maximum: 100 Marks**

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

1. Explain about the principle of image acquisition in Digital Radiography and explain in detail about the various components of a DR system.
2. Explain about the principle of working of transformers. Write about its various types and explain its use in an X-ray circuit.
3. Write about the generations of CT scanner.

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

1. Characteristic and continuous spectra.
2. Digital Subtraction Angiography.
3. Rectifiers.
4. Image intensifier tube used in fluoroscopy.
5. Write about the factors that influence the image in tomography.
6. Write down the properties of Tungsten.
7. Spinning top test.
8. CR cassette.

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

1. Write about inherent filtration.
2. Mention the types of mobile x-ray unit.
3. Write any two quality assurance tests for fluoroscopy units.
4. List any two advantages of Computed Radiography (CR) systems.
5. Name the target material used in mammography unit.
6. What is CT number?
7. Half value layer.
8. Write about any two artifacts in CT imaging.
9. Name the types of dental films.
10. Automatic Exposure Control.

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

[AHS 0422] APRIL 2022 Sub. Code: 1803

(FEBRUARY 2021 & AUGUST 2021 EXAM SESSIONS)

B.Sc. RADIOLOGY AND IMAGING TECHNOLOGY

FIRST YEAR (Regulation 2010-2011 & 2014-2015)

PAPER III - RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code: 801803

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

Answer All questions

I. Elaborate on : (3X10=30)

1. Draw and label the principles of ultrasound. Mention its interactions with various matters.
2. Discuss the MRI sequences.
3. Describe a Rotating anode X-ray tube with diagram.

II. Write Notes on : (8X5=40)

1. Portable X-rays.
2. Orthopantomograph.
3. HR CT.
4. Types of dosimeter.
5. KV unit control.
6. Cones & diaphragm.
7. High frequency generators.
8. Types of detectors used dentistry.

III. Short Answers on : (10X3=30)

1. Mention two detectors of CT.
2. Mention any two semiconductors.
3. Nipple factor.
4. Larmor equation.
5. Advantages of digital radiograph.
6. Heel effect.
7. Usage of Hydrogen in MRI.
8. Piezoelectric effect.
9. Define signal intensity.
10. Radiation protection.

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

[AHS 1122] **NOVEMBER 2022** **Sub. Code: 1803**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY
FIRST YEAR (Regulations 2010-2011 & 2014-2015)
PAPER III - RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL

Q.P. Code: 801803

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

Answer All questions

I. Elaborate on : **(3X10=30)**

1. Discuss the working principle of digital radiography.
2. List the various generations of CT scan. Discuss about its principle.
3. Discuss in detail about factors affecting the image quality.

II. Write Notes on : **(8X5=40)**

1. Image intensifiers.
2. Types of dental film and processing.
3. Spiral CT.
4. Principle of dosimeter.
5. QA of mA station.
6. Mobile X-ray unit.
7. Digital radiograph Vs computed radiograph.
8. Direct fluoroscopy.

III. Short Answers on : **(10X3=30)**

1. Heat unit.
2. Tube Voltage.
3. ABC.
4. Spare charge effect.
5. Filtration.
6. CRT.
7. DSA.
8. Anode material.
9. DR detector.
10. Filament current.

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

[AHS 0423] **APRIL 2023** **Sub. Code: 1803**

B.Sc. RADIOLOGY IMAGING TECHNOLOGY
FIRST YEAR (Regulations 2010-2011 & 2014-2015 onwards)
PAPER III - RADIO DIAGNOSIS EQUIPMENTS, MAINTENANCE AND QUALITY CONTROL
Q.P. Code: 801803

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

Answer All questions

I. Elaborate on : **(3X10=30)**

1. Describe about generation of Computed Tomography.
2. Discuss about rotating anode X-ray tube.
3. Describe about construction and working of image Intensifier tube.

II. Write Notes on : **(8X5=40)**

1. Digital radiography.
2. QA of kVp measuresment.
3. DSA.
4. Mammography.
5. Radiation production in mobile radiography.
6. Dental radiography.
7. Equipments used in DSA cath lab.
8. Tomography.

III. Short Answers on : **(10X3=30)**

1. Thermironic emission.
2. ABC.
3. What is tube current?
4. Inherent filtration.
5. Scattered radiation.
6. Hounsfield number.
7. QA of focal spot determination.
8. CR detector.
9. Tube rating.
10. X-ray generator.

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