

**B.Sc. IN MEDICAL IMAGING TECHNOLOGY
(BMIT)**

Term-End Examination

June, 2013

**BAHI-056 : ADVANCE PHYSICS OF
RADIOLOGICAL EQUIPMENT - II**

Time : 3 hours

Maximum Marks : 70

PART - A

Answer *any five* questions. Each question carries
8 marks. 8x5=40

1. Explain in detail with diagrams the scanning modes in ultrasound and list their applications.
2. List the detectors used in CT with neat diagram, explain the working of a multi-slice computed Tomography scanner and mention its advantages.
3. Explain how magnetic resonance is achieved using Larmour equation. List the advantages of MRI over other imaging modalities.
4. What is ring artefacts in CT imaging ? Explain in detail with a neat diagram about the fourth generation CT and how it helped in overcoming the ring artefact problem.

5. What is K - space ? Explain in detail about gradient coils and their role in slice encoding, phase encoding and frequency encoding.
6. Explain in detail the bio - effects of ultrasound and discuss the safety issues in medical ultrasound imaging.
7. Explain in detail the design and working of ultrasound scanner with a neat diagram.
8. With the help of a neat diagram explain the construction and working of a MRI scanner.

PART - B

9. Write short notes on *any five* questions. Each question carries 6 marks. 6x5=30

- (a) Harmonic imaging in ultrasound and its advantages
 - (b) Types of magnets used in MR imaging
 - (c) Measurement of radiation dose in CT
 - (d) T1 and T2 Relaxation in MRI
 - (e) Techniques in post - processing of computed Tomography images
 - (f) Piezo - electric effect and list the crystals used in the production of ultrasound
 - (g) 3D and 4D ultrasound and their uses in medicine
 - (h) Artefacts in MR imaging
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