

**GUJARAT TECHNOLOGICAL UNIVERSITY****M. E. Sem. – II<sup>nd</sup> - Examination – June/July- 2011****Subject code: 1723102****Subject Name: Advanced Biomedical Imaging****Date: 24/06/2011****Time: 10:30 am – 01:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

**Q.1 (a)** Explain with real life examples, the evolutionary developments in medical imaging only for anatomical to physiobiochemical imaging. **07**

**(b)** Explain with real life examples, the evolutionary developments in medical imaging only for qualitative to quantitative imaging. **07**

**Q.2 (a)** Give the name and explain the types of radiation which is generated from the nucleus of the atom. **07**

**(b)** Explain in detail the shape of anode in context with the characteristic of generated x-ray. **07**

**OR**

**(b)** Explain in detail the material of anode in context with the characteristic of generated x-ray. **07**

**Q.3 (a)** Explain in detail the refraction of ultrasound wave (not for light). **07**

**(b)** Write a short note on focused ultrasound transducers. **07**

**OR**

**Q.3 (a)** Explain in detail the divergence of ultrasound wave (not for light). **07**

**(b)** Write a short note on dynamic focusing ultrasound. **07**

**Q.4 (a)** Explain the types of grids for radiography. **07**

**(b)** Explain simple back projection image reconstruction technique. **07**

**OR**

**Q.4 (a)** Explain various grid cutoffs. **07**

**(b)** Explain filtered back projection image reconstruction technique. **07**

**Q.5 (a)** Explain in detail T1 relaxation process for different biological materials. **07**

**(b)** Explain effects of gradients in mri. **07**

**OR**

**Q.5 (a)** Explain in detail T2 relaxation process for different biological materials. **07**

**(b)** Explain effects of static magnetic field in mri. **07**

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