

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**M. E. - SEMESTER – II • EXAMINATION – WINTER • 2014**

**Subject code: 1723102**

**Date: 03-12-2014**

**Subject Name: Advance Biomedical Imaging**

**Time: 02:30 pm - 05:00 pm**

**Total Marks: 70**

**Instructions:**

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

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|------------|--|-----------|
| <b>Q.1</b> | (a) Explain the Interaction of X-Ray with matter in detail.                          | <b>07</b> |
|            | (b) Enlist and explain CT image reconstruction algorithms in brief.                  | <b>07</b> |
| <b>Q.2</b> | (a) Write clinical applications of CT imaging technique.                             | <b>07</b> |
|            | (b) Write a technical note on X-ray image intensification.                           | <b>07</b> |
|            | <b>OR</b>  |           |
|            | (b) Write a technical note on X-ray detectors.                                       | <b>07</b> |
| <b>Q.3</b> | (a) Draw and explain the block diagram of MRI instrumentation.                       | <b>07</b> |
|            | (b) Explain Computed Radiography with necessary block diagrams.                      | <b>07</b> |
|            | <b>OR</b>  |           |
| <b>Q.3</b> | (a) Enlist and explain the limitations and applications of thermography.             | <b>07</b> |
|            | (b) Explain Digital Radiography with necessary block diagrams.                       | <b>07</b> |
| <b>Q.4</b> | (a) Explain the reconstruction techniques of photoacoustic imaging.                  | <b>07</b> |
|            | (b) Write a technical note on Fluoroscopy.   | <b>07</b> |
|            | <b>OR</b>  |           |
| <b>Q.4</b> | (a) Write a brief note on MRI artifacts. Suggest the techniques to remove artifacts. | <b>07</b> |
|            | (b) Briefly describe the principal of photoacoustic imaging.                         | <b>07</b> |
| <b>Q.5</b> | (a) Explain Signal Generation and Acquisition Hardware of MPI.                       | <b>07</b> |
|            | (b) Enlist and explain the Characteristics of MRI image.                             | <b>07</b> |
|            | <b>OR</b>  |           |
| <b>Q.5</b> | (a) Explain k-Space Analysis of Data Acquisition of MRI image.                       | <b>07</b> |
|            | (b) Write a technical note on properties of magnetic particle.                       | <b>07</b> |

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