

**GUJARAT TECHNOLOGICAL UNIVERSITY****M. E. I<sup>ST</sup> Semester–Remedial Examination – July- 2011****Subject code: 713103N****Subject Name: Biomedical Image Processing****Date: 11/07/2011****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 fundamental steps in digital image processing. **07**  
(b) Explain components of digital image processing system. **07**

- Q.2** (a) Explain representation of digital image and define terms contrast & resolution. **07**  
(b) Discuss basic gray level transformation. **07**

**OR**

- (b) Explain contrast stretching and gray level slicing. **07**

- Q.3** (a) Discuss about histogram equalization. **07**  
(b) Explain histogram statistics for image enhancement. **07**

**OR**

- Q.3** (a) Explain image enhancement using arithmetic and logic operation. **07**  
(b) What do you understand by smoothing of image? Explain mean and median filter. **07**

- Q.4** (a) Explain basics of filtering in the frequency domain. **07**  
(b) Explain high pass sharpening filters in brief. **07**

**OR**

- Q.4** (a) Explain two dimensional Discrete Fourier Transform. **07**  
(b) Explain two dimensional convolution theorem. **07**

- Q.5** (a) Explain least square error restoration in brief. **07**  
(b) Explain Radon transform in brief. **07**

**OR**

- Q.5** (a) Describe in brief Sobel and Prewitt edge operator. **07**  
(b) Explain geometric and harmonic mean filters. **07**

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