

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VIII EXAMINATION – SUMMER 2016****Subject Code:181102****Date:16/05/2016****Subject Name:Fundamentals of Image Processing (Department Elective - II)****Time:10:30 AM to 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) Draw and Explain basic block diagram of image processing system. 07  
(b) Explain and write MATLAB/SCILAB code for contrast stretching and dynamic range compression of an image. 07
- Q-2** (a) Explain Basic Intensity (Gray Level) transformation. 07  
(b) What is histogram? Explain histogram equalization processing. 07
- OR**
- (b) Explain spatial domain low pass (smoothing) filtering. 07
- Q-3** (a) Explain Homomorphic filtering and write MATLAB/SCILAB code for it. 07  
(b) Draw and explain Image Degradation Model and also explain different image noise models. 07
- OR**
- Q-3** (a) Explain RGB color model in detail. 07  
(b) Explain Pseudo coloring. 07
- Q-4** (a) Explain arithmetic coding with appropriate example. 07  
(b) Find the Huffman code for the following stream of data. {a,a,a,a,a,a,b,b,b,c,c,c,c,c,d,d,d,d,d,d,d,d,d,e,e,e,e,f,f} 07
- OR**
- Q-4** (a) Explain importance of thresholding in image segmentation and also explain Global, Local and Optimum thresholding. 07  
(b) What is edge detection? Explain and compute the Gradient. 07
- Q-5** (a) What is morphology? Discuss Erosion and Dilation. 07  
(b) Explain HIT-or-MISS Transformation. 07
- OR**
- Q-5** (a) Explain Prewitts and Sobel Operators and also write MATLAB/SCILAB code for sobel operator. 07  
(b) Explain Thinning and Thickening Transformation. 07