

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VIII • EXAMINATION – SUMMER 2014

Subject Code: 181102**Date: 27-05-2014****Subject Name: Fundamentals of Image Processing****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 structure of Human eye and discuss human vision system **07**
(b) Draw and explain basic block diagram of image processing system. **07**
- Q.2** (a) Write short note on point processing for spatial domain enhancement. **07**
(b) What is histogram? Explain histogram equalization algorithm. **07**
- OR**
- (b) Compare and contrast average filtering and median filtering. **07**
- Q.3** (a) Discuss steps of image filtering in frequency domain. Discuss 2D discrete fourier transform with help of equation. **07**
(b) Write MATLAB code for homomorphic filtering on square image. **07**
- OR**
- Q.3** (a) Explain a linear image degradation model, an inverse restoration filter and its limitations. **07**
(b) List advantages and disadvantages of the wiener filter. **07**
- Q.4** (a) What are different ways of region based segmentation? Explain anyone with an example. **07**
(b) What is the purpose of Hough transform? Write steps of Hough transform for XY plane. Which problem occurs in Hough transform in XY plane for vertical line? **07**
- OR**
- Q.4** (a) Find the Huffman code for the following stream of data. **07**
{1,1,1,1,1,1,1,2,2,2,2,2,3,3,3,3,4,4,4,5,5,5,6,6,7}
(b) Explain JPEG compression algorithm with an example. **07**
- Q.5** (a) Explain dilation and erosion morphological operations. **07**
(b) Explain thinning and thickening operations on the digital image. **07**
- OR**
- Q.5** (a) Which are different color models? Explain any one in detail. **07**
(b) Write a short note on Pseudo-colouring. **07**
