

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – I • EXAMINATION – SUMMER • 2013****Subject code: 710404N****Date: 06-06-2013****Subject Name: Image Processing****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) Write a short note on major components of an image processing system. **07**
 (b) Perform histogram specification to the 8*8 image given in table1 to the target level given in table2. **07**

Table 1

Grey levels(r_k)	0	1	2	3	4	5	6	7
Number of pixels(p_k)	8	10	10	2	12	16	4	2

Table 2

Grey levels(r_k)	0	1	2	3	4	5	6	7
Number of pixels(p_k)	0	0	0	0	20	20	16	8

- Q.2** (a) Explain in detail: JPEG standard. **07**
 (b) Write short note on hit-or-miss transform with the help of suitable example. **07**
- OR**
- (b) Write a short note on HAAR transform. **07**
- Q.3** (a) What do you mean by image restoration? Explain wiener filtering method. **07**
 (b) Apply DFT to the following sequence and verify whether it works. **07**
- $x = \{1 \ 2 \ 8 \ 9\}$

OR

- Q.3** (a) What is histogram? Explain histogram equalization in detail. **07**
 (b) List the edge operators. Explain LoG in detail. **07**
- Q.4** (a) Write a short note on hough transform. **07**
 (b) Compute the first difference of the code 01010303033232212111. **07**

OR

- Q.4** (a) Explain different types of color models in brief. **07**
 (b) Prove the validity of the duality expressions $(A \odot B)^c = (A^c \odot B^c)$. **07**
- Q.5** (a) Write a short note on Dilation and Erosion Morphological operations with suitable example. **07**
 (b) Explain basic grey level transforms for Image Enhancement. **07**

OR

- Q.5** (a) Discuss the application of Digital image Processing. **07**
 (b) What do you mean by co-occurrence matrix? Explain. **07**
