

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER-V • EXAMINATION – SUMMER • 2015

Subject Code: 650011

Date: 11-05-2015

Subject Name: Image Processing

Time: 02:30 pm to 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.

Q.1 (a) (i) Define Digital image Processing **03**
(ii) Describe the Histogram Equalization process. **04**

(b) (i) Give the application of discrete Fourier transform. **02**
(ii) Write short notes on mathematical tools used in digital image processing. **03**
(iii) List any 2 principles of compression algorithms. **02**

Q.2 (a) (i) List the fundamental steps in Image processing. Describe any 3 briefly. **04**
(ii) Define Quantization. **03**
(b) Describe the components of an image processing system with a suitable block diagram. **07**

OR

(b) Describe the various elements involved in visual perception. **07**

Q.3 (a) Give the different ways of Histogram processing and describe effects on digital images. **07**
(b) Define High-pass frequency domain filters and describe how they are used for image sharpening. **07**

OR

Q.3 (a) Describe any 4 color models with their corresponding matrix forms. **07**
(b) Give the fundamentals of Full color image processing. **07**

Q.4 (a) Write notes on Huffman codes and explain the encoding and decoding mechanisms. **07**
(b) (i) What is Image segmentation? Give its fundamentals. **04**
(ii) Write short notes on Thresholding. **03**

OR

Q.4 (a) Explain how point detection is made? **07**
(b) Explain how line detection is made? **07**

Q.5 (a) What are the different edge detection methods available? Explain any 4 of them. **07**
(b) Give the fundamentals of Spatial filtering. Outline the smoothing and sharpening procedures. **07**

OR

Q.5 (a) List and explain the properties of the 2D discrete Fourier transform. **07**

(b) Write notes on

- a) LZW coding
- b) Run-length coding
- c) Block transform coding

02

02

03
