

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2171712

Date: 09/05/2017

Subject Name: Image Processing(Departmental Elective - II)

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) Explain the representation of $M \times N$ size, 8-bit gray scale images. Also explain the spatial resolution and the dynamic range resolution in this case. **07**
(b) Explain the power-law transform and its applications. **07**
- Q.2** (a) Explain 3×3 averaging operation on $M \times N$ gray scale image. **07**
(b) Explain the MMSE (Wiener) filter for image restoration. **07**
- OR**
- (b) Classify the following image intensity values in to two distinct classes {101, 201, 100, 200, 105, 205, 210, 107, 109, 208}. Give justification. **07**
- Q.3** (a) Explain Homomorphic filter giving a block diagram and its applications. **07**
(b) Explain RGB and CMY color models, and their relationship. **07**
- OR**
- Q.3** (a) Explain the image sharpening operation in spectral domain. Give its applications. **07**
(b) Explain ideal Low-Pass Filter operation spectral domain for $M \times M$ images. Give its applications. **07**
- Q.4** (a) Explain Huffman coding method with a suitable example. **07**
(b) Explain any two different noise models with their Probability Density Functions, and applications. **07**
- OR**
- Q.4** (a) Explain JPEG compression standard with its block diagram. **07**
(b) Explain opening and closing operations with suitable examples. Give their applications. **07**
- Q.5** (a) Explain edge detection methods and their applications in image segmentation. **07**
(b) Explain any two applications of image processing in process industries. **07**
- OR**
- Q.5** (a) Explain Hough transform and its applications. **07**
(b) Represent a case study of object recognition. **07**
