Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII(OLD) • EXAMINATION – WINTER 2016

Subject Code: 170307 **Date: 18/11/2016**

Subject Name: Image Processing (Department Elective-I)

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)** Explain Image formation in detail. **07**

(b) Explain types of Pixel operation with one example. **07**

Q.2 **(a)** Explain Basic gray level transformation with one example. **07**

(b) Write short note on Homomorphic filtering. **07**

OR

(b) Explain different types of High pass filters in frequency domain. Write steps for filtering in frequency domain. **07**

Q.3 **(a)** Explain LOG operator and Canny edge detector. **07**

(b) Explain Bit plane slicing of 4-bit Image. Extract 2 and 4 bit plane of given 8-bit image f(x, y). **07**

f(x, y) =

10	5	12
1	0	2
13	3	1

OR

Q.3 **(a)** Explain Order-statistic filters with one example. **07**

(b) Filter the given image *f(x, y)* by using Isotropic filter mask. **07**

***f(x, y)* =**

0	**2**	**4**
1	**3**	**0**
3	**2**	**1**

Q.4 **(a)** Explain Boundary extraction and Hole filling technique. **07**

(b) Explain Region based Segmentation techniques. **07**

OR

Q.4 **(a)** Define first and second derivatives. Derive different edge detection filter masks. **07**

(b) Explain Hit-or Miss transformation with one example. **07**

Q.5 **(a)** Explain Chain code and Image moment. **07**

(b) Explain Image Compression models with Standards. **07**

OR

Q.5 **(a)** Write short note on LZW Coding. **07**

(b) Explain different types of Regional descriptors. **07**

****