

FACULTY OF ENGINEERING

B.E. 4/4 (IT) I – Semester (Main) Examination, December 2010

Subject: Digital Image Processing (Elective – III)

Time: 3 Hours

Max. Marks : 75

Note: Answer all questions of Part A. Answer any **Five** questions from Part B.

PART – A (25 Marks)

1. What is the process used to reduce the aliasing effect of sampling. 2
2. Which are the 4-neighbours of a pixel at (x,y) location. 3
3. Give the weights of a composite Laplacian mask. 3
4. Give the expression of the excursion Low-Pass filter. 3.
5. Give the expression of an arithmetic mean filter. 3
6. Give the expression for the relation between a Band-Pass filter and a Band Reject Filter. 2
7. Give the weights of a mask for a horizontal-line detection. 2
8. Give an application of a region growing method of image-processing. 3
9. List 2 names of image compression techniques. 2
10. What is the other name of "false-color" image-processing? 2

PART – B (5x10 = 50 Marks)

- 11.(a) Explain the various steps of digital image processing. 5
- (b) Discuss the gray-level log transformation. 5
- 12.(a) Discuss about different Laplacian masks used in spatial filtering. 5
- (b) List the steps involved in the frequency domain filtering. 5
13. Explain the Gaussian & Rayleigh noise probability density function. 10
- 14.(a) Explain the purpose of Sobel operators in image-processing. 5
- (b) Discuss about a 2-D Laplacian function. 5
- 15.(a) Explain the method of converting a gray image to colour image. 5
- (b) Explain dilation and erosion. 5
- 16.(a) Discuss the piece-wise linear transformation functions. 5
- (b) What is bit-plane slicing? 5
- 17.(a) What is segmentation? Explain region-based segmentation method. 5
- (b) Explain Huffman compression model. 5