FACULTY OF INFORMATICS

B.E. 4/4 (IT) I – Semester (Main) Examination, December 2011
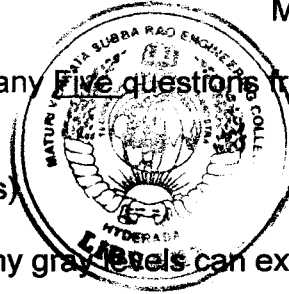
Subject: **Digital Image Processing (Elective – III)**

Time: 3 Hours

Max. Marks: 75

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

PART – A
(10x2½ = 25 Marks)

1. What is a pixel? In a k-bit gray image how many gray levels can exist?

2. What is a pattern vector? Give an example.

3. Give the weights of a composite Laplacian mask.

4. Give the weights of the point-detection mask.

5. List the methods of estimating the image degradation function.

6. Give the expression for the realization of a band-pass filter and band rejection filter.

7. Give the expression for a horizontal line detection.

8. Define the morphological image operations – Dilation and Erosion.

9. What are the complements of RGB colours?

10. What are image compression standards?

PART – B
(10 x 5 = 50 Marks)

11. Illustrate the fundamental steps in an image processing system, with a block diagram. Mention the hardware and software requirements of each block.

12. Explain image sharpening by Laplacian and gradient masks.

13. How Hough transform is useful in edge linking?

14. Explain how do you filter out noise in colour images.

15. What are colour transforms? Explain their formulations.

16. Compare and contrast the relative merits and computational complexities involved in frequency domain methods and spatial domain methods of image enhancement.

17. Write short notes on any two:
    a) One-dimensional wavelet transform-pair
    b) Butterworth filters
    c) Use of motion in image segmentation.