Code No: **R41043** **R10** **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, March/April - 2016

DIGITAL IMAGE PROCESSING

(Common to Electronics & Communication Engineering and Electronics & Computer Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
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1 a) What are the various fundamental components of digital image processing? Explain. [8]
b) Explain the following: [7]
i) neighbors of a pixel ii) Adjacency

2 a) Explain the fundamentals of intensity transformations and spatial filtering. [8]
b) What is meant by membership function? Explain. [7]

3 a) Explain the following properties of 2D – DFT
i) Translation and Rotation ii) Periodicity [8]
b) Explain image smoothing using ideal low pass filter. [7]

4 a) Draw the image degradation model and explain it. [8]
b) Explain the principles of Computed Tomography. [7]

5 a) Explain about CMY and CMYK color models. [8]
b) What are color complements? How they are useful in image processing. [7]

6 a) What are the various Multi Resolution Analysis (MRA) requirements? Explain. [8]
b) Explain Huffman coding with an example. [7]

7 a) Explain the following morphological operations:
i) Thinning ii) Thickening [8]
b) Prove that Erosion and Dilation are duals of each other with respect to set complementation and reflection. [7]

8 a) Explain how the image gradient is useful in edge detection. [8]
b) Explain the edge linking using local processing. [7]