

Set No. 1

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Code No: RT41043

R13**Set No. 2**

IV B.Tech I Semester Regular/Supplementary Examinations, Oct/Nov - 2018

DIGITAL IMAGE PROCESSING**(Common to Electronics and Computer Engineering, Electronics and Communication Engineering and Electronics and Instrumentation Engineering)****Time: 3 hours****Max. Marks: 70***Question paper consists of Part-A and Part-B**Answer ALL sub questions from Part-A**Answer any THREE questions from Part-B************PART-A (22 Marks)**

1. a) Write the properties of DST. [3]
- b) Define convolution and explain its use in image processing. [4]
- c) List out different noises in images. [4]
- d) Write the purpose of color model. [4]
- e) Explain the advantage of DWT over DCT. [3]
- f) Define laplacian of Gaussian. [4]

PART-B (3x16 = 48 Marks)

2. a) Explain the elements of an image processing system. [8]
- b) Explain about the discrete cosine transform and write its applications. [8]
3. a) Explain about image smoothing using Ideal low pass filter. [8]
- b) Explain about local histogram processing. [8]
4. a) Explain the image restoration with wiener filtering. [8]
- b) Explain parallel projection and fan beam projection based methods for image restoration. [8]
5. a) Explain the operation of color image smoothing and sharpening. [8]
- b) Explain about RGB color model. [8]
6. a) Explain about Huffman coding by taking an example. [8]
- b) What is an Image pyramid? Explain Gaussian and Laplace pyramids. [8]
7. a) Prove that erosion and dilation are dual to each other. [8]
- b) Define image segmentation. Give classification. Explain region based segmentation. [8]

Set No. 3

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1. a) Write the applications of SVD. [3]
- b) Define log transformation and write its application. [4]
- c) Explain the advantage of wiener filter over inverse filter. [4]
- d) Write the advantages of color image processing. [4]
- e) Compare different image formats with reference to number of bits and compression. [3]
- f) Explain about point detection in image. [4]

PART-B (3x16 = 48 Marks)

2. a) Explain about image acquisition. [8]
- b) Construct Walsh basis for N=4. [8]
3. a) State and prove conjugate symmetry and orthogonality property of 2D DFT. [8]
- b) Explain about histogram specification. [8]
4. a) Define an image restoration. Explain the image restoration model. [8]
- b) Explain the geometric mean filtering. Write the advantages and disadvantages. [8]
5. a) Explain about histogram processing in color images. [8]
- b) Explain about Pseudo color image processing. [8]
6. a) Explain about Run Length coding with an example. [8]
- b) Discuss about sub band coding of 2D signal [8]
7. a) Explain opening and closing operations. [8]
- b) Explain about Hough transform. [8]