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

IV B.Tech I Semester Regular Examinations, December 2013

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
*****

1		What are the fundamental steps involved in image processing? Explain	[15]
2	a)	What is meant by histogram of an image? sketch histograms of basic image types	[8]
	b)	Discuss how histogram is useful for image enhancement	[7]
3	a)	Explain about the basic of filtering in the frequency domain.	[8]
	b)	Explain image smoothing using frequency domain filters.	[7]
4	a)	Explain the concept of algebraic image restoration	[8]
	b)	Discuss the advantages and disadvantages of wiener filter with regard to image restoration	[7]
5	a)	The RGB values of a point are(0.4,0.6,0.8). find the HSV equivalent of RGB.also verify whether the original point can be obtained by the inverse transform from HSV to RGB.8M	[8]
	b)	What is meant by a color model? why it is necessary? list the various color models	[7]
6		What is error free compression? Write about variable length coding.	[15]
7	a)	Write about HIT-OR- MISS transform	[8]
	b)	Discuss about the Grey-scale morphology.	[7]
8	a)	Explain about optimal thresholding.	[5]
	b)	Discuss about morphological watersheds.	[5]
	c)	Explain about edge detection	[5]

Code No: **R41043** **R10** **Set No. 2**

IV B.Tech I Semester Regular Examinations, December 2013

DIGITAL IMAGE PROCESSING

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

Answer any Five Questions
All Questions carry equal marks
*****

1 a) Assume that a 10m high structure is observed from a distance of 50m. What is the size of the retinal image? [8]
b) Discuss about the mathematical model of the human visual system [7]

2 a) A gray level image is given , whose range is 10-60. It is necessary to transform this image to another image B, whose range should be 120-180.what should be the gray level transformation [8]
b) Discuss about histogram sliding and histogram equalization [7]

3 a) Explain about the discrete Fourier transform (DFT) of one variable and two variables. [8]
b) Explain about selective filtering [7]

4 a) Explain the concept of algebraic image restoration [8]
b) Discuss the advantages and disadvantages of wiener filter with regard to image restoration [7]

5 a) Write about color segmentation [8]
b) Consider the following RGB triplets. Convert each triplet to CMY and YIQ.
(i) (1 0 1) (ii) (1 1 1) (iii) (1 0 0) [7]

6 a) Explain how predictive coding techniques eliminate the inter pixel dependencies [8]
b) Write about Huffman coding [7]

7 a) Write about boundary extraction and thinning in basic morphological algorithms [8]
b) Write about grey scale erosion operation [7]

8 Discuss about the various thresholding techniques involved in image segmentation [15]

Code No: **R41043** **R10** **Set No. 3**

IV B.Tech I Semester Regular Examinations, December 2013

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
*****

1 a) An object is 15cm wide and is imaged with a sensor of size 8.8*6.6 mm from a distance of 0.7 m.
What should be the required focal length? [8]
b) Discuss about digital imaging system and its classification [7]

2 a) Explain about image smoothing using spatial filters [8]
b) Discuss about image sharpening in frequency domain [7]

3 a) What is homomorphic filter? How to implement it [8]
b) Write about image smoothing in frequency domain [7]

4 a) Explain about noise modeling based on distribution function [8]
b) Explain about wiener filter in noise removal [7]

5 a) Describe the various color models available in image processing [8]
b) How a color image can be converted into a grey scale image [7]

6 a) Write about haar wavelet transform [8]
b) Explain about the classification of watermarks [7]

7 a) What is grey scale morphology? Explain [8]
b) Discuss about the morphological gradient [7]

8 a) Explain the process of point ,line, edge detection in image segmentation [8]
b) Describe about the watershed algorithm [7]

Code No: **R41043** **R10** **Set No. 4**

IV B.Tech I Semester Regular Examinations, December 2013

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) Discuss about image quantization [8]

b) A medical image has a size of 8*8 inches. The sampling resolution is 5 cycles/mm. How many pixels are required? Will an image of size 256*256 be enough? [7]

2 a) Explain about histogram specification. [8]

b) Explain about fuzzy techniques for intensity transformations. [7]

3 a) Discuss about the properties of 2-D Discrete fourier transform [8]

b) Describe about image smoothing in frequency domain [7]

4 a) What is geometric mean filter? Explain [8]

b) Discuss about the noise models. [7]

5 a) Explain in detail how the colour models are converted to each other [8]

b) Discuss about colour quantization and explain about its various types [7]

6 a) What are image pyramids? Explain about them [8]

b) Describe about wavelet packets [7]

7 a) Explain about any three morphological algorithms [7]

b) Explain about Erosion & Dilation. [8]

8 a) Write about region based segmentation [8]

b) Explain the use of motion in segmentation [7]