## B.E.(with Credits)-Regular-Semester 2012-Computer Science and Engineering Sem. VII BE-CSE 701 : Digital Image Processing

P. Pages : 2 Time : Three Hours			rs <b>H H H H H H H H H H</b>	GUG/W/16/6537 Max. Marks : 80			
	Notes : 1. 2. 3. 4.		All questions carry equal marks. Illustrate your answers wherever necessary with the help of neat sketches. Due credit will be given to neatness and adequate dimensions. Assume suitable data wherever necessary.				
1.	a)	Explain about elements of visual perception.					
	b)	What a	are the components of an Image processing system.	8			
			OR				
2.	a)	Explain about image sampling and Quantization Process.					
	b)	What is meant by Digital Image Processing? Explain how digital image can be represented.					
3.	a)	Explain Fourier Transform and its inverse.					
	b)	Explai	n slant transform? What are the properties of slant transform?	8			
			OR				
4.		Explai	n the following.	16			
		i) H	aar Transform				
		ii) W	Valsh transform				
		iii) H	adamard transform				
		iv) W	Vavelet transform				
5.	a) Discuss the following frequency domain techniques of image enha		s the following frequency domain techniques of image enhancement in	detail. 8			
		i) C	lipping and Thresholding				
		ii) C	ontrast stretching.				
	b)	Explain Butterworth High pass filters and Low pass filters.					
			OR				
6.	a)	State a	nd explain properties of 2- D Fourier Transform.	8			
	b)	Discuss about Gaussian High pass and Gaussian low pass filters.					

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- 7. a) What is segmentation? Explain Region based segmentation.
  - b) Write a note on following w.r.t. segmentation.
    - i) LZW coding.
    - ii) Runlength Coding

## OR

- 8. a) What is an image? On which mathematical operations, are the two basic approaches for edge detection based? Explain in brief.
  - b) Explain basic global thresholding and give an algorithm to obtain threshold T.
- **9.** a) What is signatures? Explain in detail.
  - b) Explain the following.
    - i) Simple descriptors.
    - ii) Fourier descriptors.

## OR

10. a) Given a  $7 \times 7$  image, use a hit or miss transform to find the top edge of the  $5 \times 5$  square. 8

	0	0	0	0	0	0	0
	0	1	1	1	1	1	0
	0	1	1	1	1	1	0
	0	1	1	1	1	1	0
	-0	1	1	1	1	1	0
	0	1	1	1	1	1	0
	0	0	0	0	0	0	0

Use the two structuring elements shown below.

B <sub>1</sub> =	0	0	0		0	1	0
	0	$\bigcirc$	0	B <sub>1</sub> =	0	0	0
	0	1	0		0	0	0

- b) Write a note on following.
  - i) Erosion and Dilation
  - ii) Regional Descriptor

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