# **IMAGE PROCESSING (SEMESTER - 6)**

# CS/BCA/SEM-6/BCAE-601C/09

### **INSTRUCTIONS TO THE CANDIDATES :**

- 1. This Booklet is a Question-cum-Answer Booklet. The Booklet consists of **32 pages**. The questions of this concerned subject commence from Page No. 3.
- 2. a) In **Group A**, Questions are of Multiple Choice type. You have to write the correct choice in the box provided **against each question**.
  - b) For Groups B & C you have to answer the questions in the space provided marked 'Answer Sheet'. Questions of Group B are Short answer type. Questions of Group C are Long answer type. Write on both sides of the paper.
- 3. **Fill in your Roll No. in the box** provided as in your Admit Card before answering the questions.
- 4. Read the instructions given inside carefully before answering.
- 5. You should not forget to write the corresponding question numbers while answering.
- 6. Do not write your name or put any special mark in the booklet that may disclose your identity, which will render you liable to disqualification. Any candidate found copying will be subject to Disciplinary Action under the relevant rules.
- 7. Use of Mobile Phone and Programmable Calculator is totally prohibited in the examination hall.
- 8. You should return the booklet to the invigilator at the end of the examination and should not take any page of this booklet with you outside the examination hall, **which will lead to disqualification**.
- 9. Rough work, if necessary is to be done in this booklet only and cross it through.

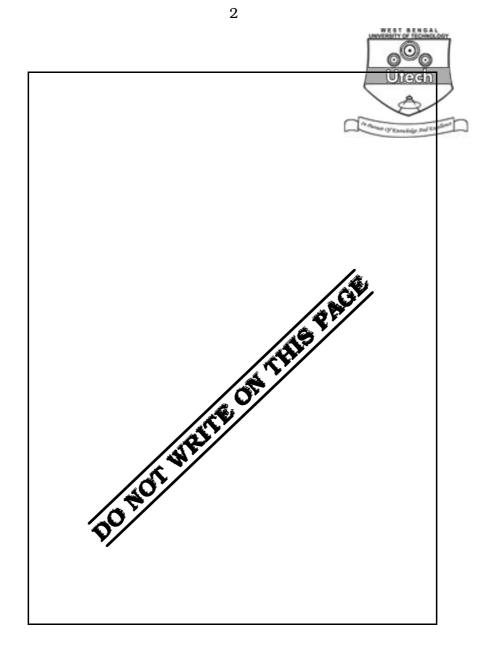
### No additional sheets are to be used and no loose paper will be provided

### FOR OFFICE USE / EVALUATION ONLY Marks Obtained

	Group – A							Group – B			Group – C					
Question Number															Total Marks	Examiner's Signature
Marks Obtained																

## Head-Examiner/Co-Ordinator/Scrutineer







[Full Marks: 70

# ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE - 2009 IMAGE PROCESSING SEMESTER - 6

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Time : 3 Hours ]

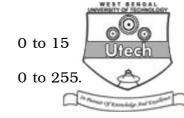
# **GROUP – A**

## ( Multiple Choice Type Questions )

- 1. Choose the correct alternatives for any *ten* of the following :  $10 \times 1 = 10$ 
  - i) Sampling of an image is required for
    - a) Quantization b) Sharpening
    - c) Smoothing d) Digitization.
  - ii) An Image of size  $1024 \approx 1024$  pixels in which the intensity of each pixel is represented by 8 bit. The storage required for uncompressed image is
    - a) 1 kB b) 1 MB
    - c) 2 kB d) none of these.
  - iii) Which of the following is a common technique for enhancing the appearance of image ?
    - a) Splitting and Merging b) Region growing
    - c) Watershed segmentation d) Histogram equalization.
  - iv) Region growing is a process used in
    - a) segmentation b) edge detection
    - c) thinning d) noise removal.

- 4 v) Intensity range of 8-bit pixel image is 0 to 7 0 to 15 a) b) 0 to 31 0 to 255. c) d) FFT is based on Convolution Correlation b) a) Scaling d) c) An image is a 2D array of digital data b) a) photographic objects light signals. c) d) Smoothing filters are used for Blurring a) Enhancing contrast b) Blurring and noise reduction c) d) Blurring and enhancing contrast. A wavelet transform is a special case of ix) Z-transform Laplace transform b) a)
  - Fourier transform d) none of these. c)
- We have an image is EPS and JPEG formats X)
  - a) the JPEG file will be larger in size
  - b) the EPS file will be larger in size
  - c) both files will be equal in size
  - none of these. d)

- vi)
- vii)
- viii)



- None of these.
- electrical signals







5

xi) Which of the following is not a kind of filtering ?

- a) Least squareb) InverseC) Kalmand) Canny.
- xii) Image averaging is used for
  - a) Smoothing an image b) Segmenting an image
  - c) darkening and image d) none of these.

# **GROUP – B**

### ( Short Answer Type Questions )

		Answer any <i>three</i> of the following. $3 \times 5 =$	15										
2.	a)	Write down a name of an image capturing technique/device.											
	b)	Briefly explain the working principle of the image capture by the technique/device.	hat 3										
	c)	How can the captured images be transferred to a PC ?											
3.	a)	What do you mean by image enhancement ?	2										
	b)	Write about a transform or operation that can be used for image enhanceme Explain.											
4.	a)	How do you represent a gray scale image ?											
	b)	How do you represent a colour image ?											
5.	a)	Define entropy.	1										
	b)	What is information redundancy ?	1										
	c)	Distinguish between lossy and lossless compressions.	3										
0	Ξ.												

6. Discuss Huffman coding with example.



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GROUP -	С
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		( Long Answer Type Questions ) 🛛 👩 🎱 👩	
		Answer any <i>three</i> of the following. $3 \times 15 = 4$	5
7.	a)	What do you mean by brightness and contrast of an image ?	3
	b)	Write an algorithm to compute the histogram of an image.	4
	c)	Discuss the need of histogram equalization.	3
	d)	What are the effects of negation to a binary image ?	2
	e)	What is least square error restoration ?	3
8.	a)	What is meant by image segmentation ? $2\frac{1}{2}$	1 2
	b)	What is meant by image compression ? $2\frac{1}{2}$	l 2
	c)	Name a transform that can be used for image compression and explain how a	it
		can be used for image compression.	0
9.	a)	What do you mean by image recognition ?	2
	b)	What is meant by classification of images ?	3
	c)	Describe any image recognition technique. How is it used for image	
		classification ?	0
10.	a)	What do you mean by smoothing and sharpening of an image ? $2\frac{1}{2} + 2\frac{1}{2}$	l 2
	b)	Somebody has captured a photograph as shown in figure below :	

- i) If we want to remove the horizontal lines and get a clear image of the letter"*D*", what we have to do ?
- ii) Can you get an image of the lines and remove the letter "D"? Explain your answers with flow diagrams wherever appropriate. 5 + 5



- 7 11. Write short notes on any *three* of the following :
  - a) Quad tree
  - b) JPEG compression
  - c) Frequency domain filtering
  - d) Hadamard transforms
  - e) Frequency Domain Filtering.





END