

“Please check whether you have got the right question paper.”

- i) Question. No. 1 and Question. No. 6 are compulsory.
- ii) Attempt any two questions from the remaining question from each section
- iii) Assume suitable data if necessary

SECTION A

- Q.1 Answer the following (any five) 10
- a) What is image transform?
 - b) Define first order gradient derivative operator
 - c) Define entropy of an image
 - d) What is image restoration?
 - e) What is image compression?
 - f) Define DCT and its inverse
 - g) What is a digital image?
 - h) Give the mask used for high-boost filtering
- Q.2 a) Consider an image that uses a window of size 5×5 . The gray level values inside the 5×5 Sub-image are 15,17,15,17,16,10,8,9,18,15,16,12,14,11,15,14,15,11,100,15,14,13,12,12,17 10
 What values could
- 1) A local averaging filter (mean)
 - 2) A median filter
 - 3) A mode filter
 - 4) A max filter
 - 5) A min filter
- Assign to the central pixel of this sub-image
- b) Elaborate different derivative based image sharpening filters. 05
- Q.3 a) Explain following image enhancement techniques 08
- i) Contrast stretching
 - j) Bit plane slicing
- b) Consider the two image subset S_1 and S_2 shown in figure for $v = \{1\}$, determine whether the two subsets are: 07
- i) 4 - adjacent
 - ii) 8 – adjacent
 - iii) m –adjacent

S_1	S_2
0 0 0 0	0 0 1 1
0 0 1 0	0 1 0 0
0 0 1 0	1 0 0 0
0 0 1 1	0 0 0 0

Q.4	a) Discuss run-length encoding with suitable example. How does it remove inter pixel redundancy?	08
	b) Explain the LZW – coding technique with suitable example	07
Q.5	Write short notes on:	15
	a) Binary image compression standard	
	b) TIFF image file format	
	c) Linear smoothing filters	
SECTION B		
Q.6	Answer the following (<u>any five</u>)	10
	a) What do you mean by an object point?	
	b) Define multilevel thresholding	
	c) What is coding redundancy?	
	d) Define object recognition step in DIP	
	e) What is chain code?	
	f) What is image closing?	
	g) Define skeletons	
	h) Differentiates between region and boundary	
Q.7	a) Describe seeded region growing segmentation technique in detail	08
	b) Discuss edge detection process in image segmentation	07
Q.8	a) Elaborate the morphological algorithm for thinning in detail along with boundary extraction algorithm.	08
	b) Explain the RGB and HSI color models in brief	07
Q.9	a) Explain simple boundary and region descriptors	08
	b) What is image texture? What are different approaches to describe texture	07
Q.10	Write short notes on	15
	a) Boundary representation techniques	
	b) Color transformations	
	c) Applications of image segmentation	