



II SEMESTER MCA

END SEMESTER EXAMINATIONS, APR/MAY 2018

SUBJECT: DIGITAL IMAGE PROCESSING [MCA 5003]

REVISED CREDIT SYSTEM (23/04/2018)

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- * Answer ALL the questions.
- Missing data may be suitable assumed.

1A.	What is Digital Image Processing (DIP)? Explain the key steps involved in it briefly.							
1B.	Define pixel in a digital image. Discuss the different types of relationships exists with its neighborhood.							
1C.	Define Adjacency and Connectivity.							
	A path from pixel p with coordinate (x,y) to pixel q with coordinate (s,t) with values from $V=\{2,3,5\}$. Define 4-, 8-, and m-paths between p and q pixels in the sub image given below.							
	4 5 6 4 5 4							
2A.	3 5 3 4 3 4 >q	5						
.,	4 4 4 2 4 3							
	5 3 4 3 3 5 P < 6 3 2 3 4 6							
	p 6 3 2 3 4 6 5 4 5 3 3 6							
2B.								
2C.	What is gamma correction?							
3A.	What is Convolution and Correlation of an Image? Explain operations in the 1D spatial domain with an example.							
3B.	Why Laplacian operator is normally used for image sharpening operation? Discuss.							
3C.	What is Image Segmentation?							

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4A.	Grey Levels	No. of Pixels	(0, 1, 2, 3, 4, 5, 6, 7) and plot the histogram.			
	(r _k)	(n _k)				
	0	00				
	1	10				
	2	12				
	3	20				
	4	30				
	5	50				
	6	60				
	7	74				
4B.	Why Ideal low pass and high pass filters lead to ringing effect? Does Gaussian filter lead to ringing effect?					
4C.	What is the usefulness of chromaticity diagram?					
5A.	What is Thresholding(T)? Write an algorithm to compute 'T' automatically for global thresholding.					
5B.	Explain Opening and Closing morphological operations.					
5C.	Define Hit-or-Miss transform. What is the application of Hit-or-Miss transform?					