

Reg.No. _____



Karunya UNIVERSITY

(Karunya Institute of Technology & Sciences)
(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

End Semester Examination – Nov/Dec – 2016

Code : 14EC3071
Sub. Name : DIGITAL IMAGE PROCESSING

Semester : 2016-17 ODD
Duration : 3hrs
Max. marks : 100

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

Q. No.	Sub Div.	Questions	Course Outcome	Marks																	
1.	a.	With neat block diagram, explain the fundamental steps involved in digital image processing.	CO1	10																	
	b.	Discuss the real time applications of digital image processing.	CO1	10																	
(OR)																					
2.	a.	Explain in detail the various grey level transforms available for digital images.	CO1	15																	
	b.	<table><tr><td>4</td><td>7</td><td>35</td></tr><tr><td>1</td><td>8</td><td>2</td></tr><tr><td>45</td><td>34</td><td>5</td></tr></table> <div>Image window</div> <table><tr><td>1</td><td>1</td><td>1</td></tr><tr><td>2</td><td>2</td><td>2</td></tr><tr><td>-1</td><td>-1</td><td>-1</td></tr></table> <div>3 x 3 mask</div> <p>Calculate the response (R) for the centre pixel of the image using the given mask using the averaging technique.</p>	4	7	35	1	8	2	45	34	5	1	1	1	2	2	2	-1	-1	-1	CO1
4	7	35																			
1	8	2																			
45	34	5																			
1	1	1																			
2	2	2																			
-1	-1	-1																			
3.	a.	Define histogram. How does histogram processing enhance the quality of the images?	CO1	15																	
	b.	Estimate the transfer function of 2 nd order Butterworth Low pass filter for D _o value of 15 and D (u,v) values of 10, 20 and 30. Plot the graph between H(u,v) and D(u,v). (10)	CO2	5																	
(OR)																					
4.	a.	How will you perform image sharpening using frequency domain filters? Support your answer with necessary mathematical equations.	CO2	15																	
	b.	Differentiate hue, saturation and intensity.	CO2	5																	
5.	a.	Frame a model for restoring the original image from the degraded image. Support your answer with mathematical equations.	CO2	10																	
	b.	Comment briefly on the various noise probability density functions used in the image restoration process.	CO2	10																	
(OR)																					
6.	a.	What do you mean by mean filter? How can you use the different types of mean filters for image restoration?	CO3	10																	
	b.	Explain the inverse filtering process for restoring the original image from the noise corrupted image.	CO3	10																	
7.	a.	Describe the several methodologies for estimating the degradation function in the restoration process.	CO3	10																	
	b.	Explain the following morphological operators in detail: (a) Erosion, (b) Dilation, (c) Opening, (d) Closing and (e) Thinning	CO3	10																	
(OR)																					
8.	a.	What do you mean by order statistics filters? How can you use these filters for	CO3	1																	

		image restoration?		0
	b.	Comment briefly on the various thresholding concepts used in digital image processing techniques.	CO3	1 0
		<u>Compulsory:</u>		
9.	a.	How will you detect the (a) points, (b) lines and (c) edges using various masks in digital images?	CO3	2 0

ALL THE BEST