Sri Sivasubramaniya Nadar College of Engineering, Kalavakkam – 603 110
(An Autonomous Institution, Affiliated to Anna University, Chennai)

Department of Computer Science and Engineering
Continuous Assessment Test – I / II / III
Question Paper

Degree & Branch	BE & CSE				Semester	6
Subject Code & Name	UCS1623 – IMAGE PROCESSING AND ANALYSIS				Regulation:	2018
Academic Year	2021-2022	Batch	2019-2023	Date	05-04-2022	FN / AN
Time: 8.30 AM to 10 AM		Answer All Questions			Maximum: 50 Marks	

Part – A (6×2 = 12Marks)

<KL2>	1. How do you represent the digital images?	<CO1>
<KL1>	2. What is dynamic range of an image?	<CO1>
<KL3>	3. Find the number of bits required to store a 256 x 256 image with 32 gray levels?	<CO1>
<KL1>	4. What do you meant by Zooming and shrinking of digital images?	<CO1>
<KL2>	5. Define City-Block distance.	<CO1>
<KL3>	6. Let I = {0,0,1,0,0} be an image. Using the mask K = {3,2,8}, Perform the convolution with **Zero** padding.	<CO2>

Part – B (3×6 = 18 Marks)

KL2	7. Discuss the relationship between pixels with neat diagrams for the following: i) Neighbours of a pixel ii) Connectivity iii) Distance measures iv) Path	<CO1>

8. Consider an image, and a set of filters of sizes 3x3. Construct the resultant images in terms of pixels.

KL3

1	3	5
4	4	3
5	2	2

i) Low Pass filter
ii) High Pass filter

<CO2>

9. Apply the distance methods city block, chessboard and m-path to compute the distance between the pixels 'p' and 'q' for the given image segment.

KL3

3	1	2	1(q)
0	2	0	2
1	2	1	1
1(p)	0	1	2

<CO2>

Hint: Use V = {0,1} for m-path distance method

Part – C (2×10 = 20 Marks)

<KL3>	10. Apply the Zooming methods, Nearest Neighbor and Bi-linear interpolation to zoom the given image segment to the size 2x (2 times). Is the result same for both the methods? <table><tr><td>69</td><td>50</td><td>80</td></tr><tr><td>45</td><td>60</td><td>66</td></tr><tr><td>30</td><td>55</td><td>80</td></tr></table>	<CO1>
	(OR)	
<KL3>	11. Consider the following image and compute the threshold using automatic selection method to segment it into two segments. <table><tr><td>1</td><td>8</td><td>4</td><td>3</td><td>6</td><td>2</td><td>5</td></tr><tr><td>0</td><td>3</td><td>8</td><td>3</td><td>6</td><td>5</td><td>4</td></tr><tr><td>3</td><td>9</td><td>4</td><td>7</td><td>6</td><td>2</td><td>8</td></tr></table>	<CO1>
<KL2>	12. Explain smoothing spatial filters with suitable examples.	<CO2>
	(OR)	
<KL2>	13. Explain sampling and quantization with reference to digital image processing.	<CO1>