

K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)
End Semester Exam
May – June 2022-23

(B.Tech/M.Tech.) Program: **Information Technology**
 Examination: **TY Semester: VI**

Course Code: **ITDLC6053** and Course Name: **Image Processing**

Duration: 2.30 Hours

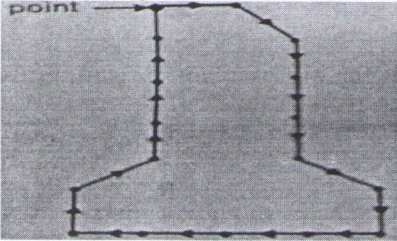
Max. Marks: 60

Date: 22-05-2023

Instructions:

- (1) All questions are compulsory.
- (2) Draw neat diagrams wherever applicable.
- (3) Assume suitable data, if necessary.

		Max. Marks	CO	BT level
Q.1	Solve any six questions out of eight:	12		
i)	Explain sampling and quantization in image processing	02	CO1	U
ii)	Explain Gray-level Slicing and Thresholding in image processing	02	CO2	U
iii)	Explain High Pass Filters in frequency domain	02	CO3	R
iv)	Analyze the Run length encoding (RLE) for the given sequence {2,2,2,5,5,5,5,5,5,5,5,5,6,6,6,6}	02	CO4	An
v)	Explain with example Edge Detections Methods	02	CO5	U
vi)	Describe Robert and Prewitts operations in image segmentation	02	CO6	U
vii)	Explain LZW algorithm with example	02	CO4	U
viii)	Explain Polygon Approximation	02	CO6	U
Q.2	Solve any four questions out of six.	16		
i)	List and explain image Acquisition methods(single sensor, Sensor Strips and Sensor Arrays)	04	CO1	U
ii)	Demonstrate histogram equalization of the given data Grey level: 0 1 2 3 4 5 6 7 Number of pixels: 100 90 50 20 0 0 0 0	04	CO2	A

iii)	Explain Low Pass Filters in frequency domain	04	CO3	U																
iv)	Explain general block diagram of an image-compression	04	CO4	U																
V	Explain Hit-or-Miss Transform	04	CO5	U																
VI	Explain types chain codes representation methods	04	CO6	U																
Q.3	Solve any two questions out of three.	16																		
i)	List and explain distance measure methods in image processing.	08	CO1	U																
ii)	Compute the DCT transform of the given image <table border="1" data-bbox="320 648 630 809"> <tbody> <tr><td>2</td><td>4</td><td>4</td><td>2</td></tr> <tr><td>4</td><td>6</td><td>8</td><td>3</td></tr> <tr><td>2</td><td>8</td><td>10</td><td>4</td></tr> <tr><td>3</td><td>8</td><td>6</td><td>2</td></tr> </tbody> </table>	2	4	4	2	4	6	8	3	2	8	10	4	3	8	6	2	08	CO3	A
2	4	4	2																	
4	6	8	3																	
2	8	10	4																	
3	8	6	2																	
iii)	Apply Dilation and Erosion Morphological operation on given input image 7x7 and structuring element 2x2. 7x7 input image 2x2 structuring element 0 0 0 0 0 0 1 0 0 1 0 1 0 1 0 0 1 0 1 0 1 0 1 0 0 1 0 1 0 1 0 0 1 1 1 1 1 0 0 0 0 1 0 0 0 0 0 0 1 0 0 0	08	CO5	A																
Q.4	Solve any two questions out of three.	16																		
i)	Demonstrate the median value of the marked pixels in image using 3x3 Mask. [18 22 33 25 32 24; 34 128 24 172 26 23; 22 19 32 31 28 26]	08	CO2	A																
ii)	Construct the IGS code for the given grey level data set {100,110,124,124,130,110,200,210}	08	CO4	C																
iii)	Construct the 4-direction and 8-direction chain codes. Determine the shape number of the given image for 8-direction. 	08	CO6	C																