

31-05-2022

**K. J. Somaiya Institute of Engineering and Information Technology, Sion, Mumbai-22**

**(Autonomous College Affiliated to University of Mumbai)**

**End Semester Exam**

**May – June 2021-22**

**(B.Tech/M.Tech.) Program: Information Technology**

**Examination: TY Semester: VI**

**Course Code: 1UITDLC6053 and Course Name: Image Processing**

**Duration: 03 Hours**

**Max. Marks: 60**

**Instructions:**

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

		Max. Marks	CO	BT level
<b>Q.1</b>	<b>Solve any six questions out of eight:</b>	12		
i)	Explain sampling and quantization in image processing	02	CO1	U
ii)	Describe Bit Plane Slicing and Gray Level Slicing	02	CO2	U
iii)	Explain Discrete Cosine Transform(DCT)	02	CO3	R
iv)	Explain Psychovisual redundancy.	02	CO4	U
v)	List and explain morphological operation	02	CO5	U
vi)	Explain region splitting in image segmentation	02	CO6	U

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vii)	Explain lossy compression method.	02	CO4	U
viii)	Explain Convolution and Correlation	02	CO1	U
<b>Q.2</b>	<b>Solve any four questions out of six.</b>	<b>16</b>		
i)	Describe different types of Interpolation methods.	04	CO1	U
ii)	Describe Dynamic Range Compression(Log transformation)	04	CO2	U
iii)	Explain Low pass frequency domain filter.	04	CO3	U
iv)	Analyze RLE on the following data set: 2 2 2 5 5 5 5 5 5 6 6 6 6	04	CO4	An
V	Explain Skeletonization morphological with example	04	CO5	U
VI	Explain Sobel and Prewitts operations in image segmentation	04	CO6	U
<b>Q.3</b>	<b>Solve any two questions out of three.</b>	<b>16</b>		
i)	List and explain Steps of Image Processing.	08	CO1	U
ii)	Find the DFT of the given image use the DFT along the rows and then along the columns. 0 1 2 1 2 3 4 3 1 2 3 2	08	CO3	A

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)	Compute the Neighbourhood Average Filter, Weighted Filter and Median Filter value of marked pixel using 3x3 mask. 23 25 30 35 30 25 30 35 37 40 45 40 37 43 45 38 40 43 42 46 35 40 42 45 47	08	CO2	Apply
ii)	Analyze the Huffman code for given data set: 1,1,1,1,1,1, 2,2,2,2,2,2, 3,3,3,3,3, 4,4,4,4, 5,5,5, 6,6, 7	08	CO4	Analyze
iii)	List and explain region based segmentation methods	08	CO6	U