IT - IP Extra

K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

May-June 2023-2024
(B.Tech / M.Tech.) Program: Information Technology Scheme: II
Regular Examination: TY Semester: VI
Course Code: **ITDLC6053** and Course Name: Image Processing
Date of Exam: 25/5/2024 Duration: 02.5 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
Q 1	**Solve any six questions out of eight:**	**12**		
i)	Describe Image Sampling and Quantization	2	CO1	U
ii)	Explain benefit Bit-plane slicing method in point processing	2	CO2	U
iii)	Explain image formation model in image transform	2	CO3	U
iv)	Describe lossy and lossless compression methods	2	CO4	U
v)	Explain opening and closing morphological operations	2	CO5	U
vi)	Explain 4 and 8-directional chain code	2	CO6	U
vii)	Explain Convolution and Correlation concept	2	CO1	U
viii)	Describe Compression Ratio	2	CO4	U
Q.2	**Solve any four questions out of six.**	**16**		
i)	List and explain steps of Image Processing	4	CO1	U
ii)	Describe median and average filtering in spatial domain	4	CO2	U
iii)	Explain Homo-Morphic filter in transform domain	4	CO3	U
iv)	Analyze the Run Length Encoding (RLE) for given sequence: 22255555555666644444433333333 and mentioned the limitation	4	CO4	An
v)	Explain Hit-or-Miss transform in morphological area	4	CO5	U
vi)	Explain Region splitting and merging technique	4	CO6	U

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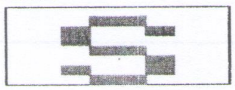
Q.3	**Solve any two questions out of three.**	**16**		
i)	Describe Image Sensing and Acquisition methods	8	CO1	U
ii)	Analyze the Arithmetic code for five symbol sequence {A B B C C} from the three symbol source code.	8	CO4	An
iii)	Apply Dilation and Erosion morphological methods on given image: X=[0000000, 0101010, 0101010, 0101010, 0101010, 0001000, 0001000] and structuring matrix B=[1 0, 0 1].	8	CO5	Apply
Q.4	**Solve any two questions out of three.**	**16**		
i)	Apply the 3x3 average filter on the given image by assuming zero padding: [1 2 3 2, 4 2 5 1, 1 2 6 3,2 6 4 7]	8	CO2	Apply
ii)	Apply 2D-DFT on the given image by using 4x4 kernel matric and find inverse transform: 1 1 1 1, 1 1 1 1, 1 1 1 1, 1 1 1 1	8	CO3	Apply
iii)	Apply Region splitting and merging technique on given image and draw the quad tree of entire procedure 	8	CO6	Apply

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