Code No.: R22EC633OE

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CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
III–B.TECH–II–Semester End Examinations (Supply) - December- 2025
DIGITAL IMAGE PROCESSING
(CSM)

[Time: 3 Hours] **[Max. Marks: 60]**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 10 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A **(10 Marks)**

1. a)	Measure the City block distance between P(2,3) and Q(4,5) pixels.	[1M]
b)	List the applications of KL Transform.	[1M]
c)	What is the use of histogram statistics for image enhancement?	[1M]
d)	Define gray – level slicing with a neat diagram.	[1M]
e)	Compare image enhancement and image restoration.	[1M]
f)	What are the different sources of degradation?	[1M]
g)	Discuss the global thresholding in image segmentation.	[1M]
h)	What is meant by erosion and dilation?	[1M]
i)	Define interpixel redundancy.	[1M]
j)	What is the purpose of fidelity criteria in image compression?	[1M]

PART-B **(50 Marks)**

2.	Discuss about the sampling and Quantization and Compare Uniform sampling and Non-Uniform Sampling.	[10M]
	OR	
3.a)	Explain about Walsh and Hadamard Transform.	[5M]
b)	Describe any three properties of 2D – DFT.	[5M]
4.	Discuss the following Spatial filtering techniques	
a)	Median Filtering.	[5M]
b)	Domain High Pass Filtering.	[5M]
	OR	
5.a)	Illustrate and explain the process of image enhancement in frequency domain.	[5M]
b)	With a neat diagram describe the Gaussian Low pass filter and Gaussian High pass filter.	[5M]
6.	What is meant by image restoration? Explain the image degradation model with neat block diagram.	[10M]
	OR	
7.	Discuss about Constrained Least Square filtering restoration process.	[10M]
8.	Explain the following discontinuities (i). point detection. (ii). line detection. (iii). edge detection.	[10M]
	OR	
9.	Distinguish between opening and closing operations in morphological image processing. How do these operations help in noise removal and object shape analysis?	[10M]
10.a)	Explain about lossy and lossless predictive coding.	[5M]
b)	Explain about transform based compression.	[5M]
	OR	
11.	Apply the Huffman code compression for the word "COMMITTEE".	[10M]

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