MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
(Autonomous Institution – UGC, Govt. of India)
IV B.Tech I Semester Supplementary Examinations, April 2023
Digital Image Processing
(ECE)

Roll No										

Time: 3 hours   **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1	**A**	With a neat block diagram, explain the fundamental steps in digital image processing.	**[8M]**
	B	Explain the following two properties of 2D-DFT:	**[2M]**
		i) Convolution	**[2M]**
		ii) Correlation	**[2M]**
		iii) Periodicity	

OR

2	**A**	Discuss the role of sampling and quantization with an example	**[6M]**
	B	Explain Discrete Cosine Transform and specify its properties.	**[8M]**

SECTION-II

3	**A**	What is point processing? Explain how it improves image enhancement	**[7M]**
	B	With an example explain histogram equalization.	**[7M]**

OR

4	**A**	What is spatial filtering? How it is useful for image enhancement, also discuss different types of spatial filters used in image enhancement?	**[9M]**
	B	Discuss any one frequency domain technique of Image smoothing.	**[5M]**

SECTION-III

5	**A**	Explain about image restoration using inverse filtering. Write the draw backs of this method.	**[7M]**
	B	What are the different ways to estimate the degradation function? Explain	**[7M]**

OR

6	**A**	With relevant mathematical expressions, explain how a Wiener filter achieves restoration of a given degraded image.	**[9M]**
	B	Explain in detail Constrained Least Squares Restoration.	**[5M]**

SECTION-IV

7	**A**	Write about Region based segmentation.	**[6M]**
	B	Explain the following	**[4M]**
		i) Edge Linking	**[4M]**
		ii) Boundary Extraction	

OR

8	**A**	Explain the concept of opening and closing operations in morphology & mention the properties of opening And closing.	**[8M]**
	B	Explain about morphological hit-or-miss transform.	**[6M]**

SECTION-V

9   **A**   Draw the block diagram of lossy and lossless predictive coding model and explain it.   **[7M]**

      B   Explain briefly the Transform based compression   **[7M]**

<p align="center">OR</p>

10   **A**   Explain image compression using Huffman coding. And construct a Huffman code for the Word "COMMITTEE".   **[10M]**

      B   Write a short note on JPEG 2000 Standards.   **[4M]**

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