Q.P. Code: 16EC432 **R16**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech IV Year I Semester Supplementary Examinations August-2022

DIGITAL IMAGE PROCESSING

(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	**a**	List out the fundamental steps in digital image processing which can be applied to images.	**6M**
	b	Explain the important terms related to Imaging Geometry with suitable applications.	**6M**
		OR	
2	**a**	Discuss the process of image sense and acquisition along with suitable diagrams.	**6M**
	b	Illustrate the following mathematical operations on digital images with relevant expressions and diagrams. i) Arithmetic operations ii) Logical operations.	**6M**

UNIT-II

3	**a**	List out the properties of 2D – Orthogonal Transform and 2D – Unitary transform.	**6M**
	b	Determine the image basis function of Walsh Transform when N = 4.	**6M**
		OR	
4	**a**	Define 2D – Discrete Cosine Transform and discuss the properties of 2D-DCT.	**6M**
	b	Prove the Periodicity property of 2D – Discrete Fourier Transform with relevant expression.	**6M**

UNIT-III

5	**a**	Define histogram and discuss the histogram four basic image types.	**6M**
	b	Illustrate the procedure for histogram process and list out the uses of histogram.	**6M**
		OR	
6	**a**	Define the image enhancement in frequency domain and give the expression.	**6M**
	b	Illustrate the smoothing filters in frequency domain along with the required expressions.	**6M**

UNIT-IV

7	**a**	Identify parts of the degradation/restoration model in image processing and explain the function each part.	**6M**
	b	Compare the Rayleigh noise and Erlang noise with proper PDF expression.	**6M**
		OR	
8	**a**	Explain the threshold-based segmentation methods with suitable examples.	**6M**
	b	Label the parts of Template matching and mention its function.	**6M**

UNIT-V

9	**a**	Define Image Compression and outline the importance of the image compression to the industry.	**6M**
	b	Explain the coding redundancy and spatial/Temporal redundancy with suitable examples.	**6M**
		OR	
10	**a**	Illustrate the procedure of the variable length coding along with suitable example.	**6M**
	b	Demonstrate the steps for Measuring Image Information in image compression techniques.	**6M**

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