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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech IV Year I Semester Regular Examinations February-2022

DIGITAL IMAGE PROCESSING

(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 60

PART-A

(Answer all the Questions 5 x 2 = 10 Marks)

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|---|--|----|----|
| 1 | a List out the various types of adjacency. | L1 | 2M |
| | b What are advantages of Walsh transform over Fourier transform? | L1 | 2M |
| | c What do you mean by image enhancement? | L1 | 2M |
| | d List the significant features of a median filter. | L1 | 2M |
| | e List out the various image compression standards. | L1 | 2M |

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

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|---|--|----|----|
| 2 | a Discuss about the spatial operations and Geometric spatial transforms related to image processing. | L2 | 5M |
| | b Summarize the concepts of image modeling with relevant expressions. | L2 | 5M |

OR

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|---|---|----|----|
| 3 | a Explain about the basic pixel relationships and distance measures between pixels in a digital image | L2 | 5M |
| | b Explain the Arithmetic operations on digital images with relevant expressions and diagrams. | L2 | 5M |

UNIT-II

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|---|--|----|----|
| 4 | a Illustrate that DFT matrix satisfies the unitary property with necessary expressions | L2 | 5M |
| | b Prove the following two properties of 2D-DFT:
i) Convolution ii) Correlation | L2 | 5M |

OR

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|---|--|----|----|
| 5 | a What is the need of image transform? List out various types of transform used in image processing. | L2 | 5M |
| | b Show that Discrete Fourier Transform has property of periodicity | L2 | 5M |

UNIT-III

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|---|---|----|----|
| 6 | a Explain the concept of histogram for various images with relevant diagrams. | L2 | 5M |
| | b Explain the concept of Laplacian in frequency domain filtering of images. | L2 | 5M |

OR

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|---|---|----|----|
| 7 | a Explain the histogram equalization operation in image enhancement with necessary expressions. | L2 | 6M |
| | b Define the following terms: Saturation and Hue. | L2 | 4M |

UNIT-IV

- 8 a Discuss about the structure and mathematical functions for probability density functions of any 5-noise models. L2 5M
- b Explain the role of thresholding in segmentation. L2 5M

OR

- 9 a Explain about the local processing approach of linking edge points with necessary steps. L2 5M
- b Illustrate the operation of Prewitt mask & Sobel mask operators in edge detection. L2 5M

UNIT-V

- 10 a Explain the various data redundancies with respect to image compression. L2 5M
- b Explain the Run Length Coding with respect to image compression L2 5M

OR

- 11 Explain the following with respect to Wavelet Transform (WT). L3 10M
- i) 1 D – Wavelet Transforms ii) 2D Wavelet Transforms

END