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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Regular Examinations Nov/Dec 2019
DIGITAL IMAGE PROCESSING
(Electronics & Communication Engineering)

Time: 3 hours   Max. Marks: 60

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

UNIT-I

1 **a** Describe the functions of elements of DIP system with a diagram.   **7M**
  b List and explain the applications of DIP?   **5M**

OR

2 **a** Explain the following mathematical tools in image processing with Examples.   **7M**
  b Explain the basic relationship between pixels?   **5M**

UNIT-II

3 **a** Derive the expression for 1-D and 2-D Walsh transform kernel.   **7M**
  b Perform KL transform for following matrix.   **5M**

$$\begin{bmatrix} 4 & -2 \\ -1 & 3 \end{bmatrix}$$

OR

4 **a** Check whether DFT matrix is unitary or not.   **6M**
  b Explain about discrete cosine transform.   **6M**

UNIT-III

5 **a** Describe in detail about   **6M**
       (i)Gaussian HPF.   (ii) Laplacian.
  b How high pass filtering is used in frequency domain for image enhancement? **6M**

OR

6 **a** Explain how addition and subtraction operations are useful in image enhancement.   **6M**
  b How low pass filtering is used in frequency domain for image enhancement?   **6M**

UNIT-IV

7 **a** Explain about edge detection in detail.   **8M**
  b What is the role of thresholding in segmentation?   **4M**

OR

8 **a** Explain the method of inverse filtering for image restoration.   **6M**
  b Describe the procedure for image segmentation based on Region growing with   **6M**
     relevant examples.

UNIT-V

9 **a** On what basis Huffman coding and arithmetic coding are useful for image   **6M**
     compression? Explain.
  b With an example explain Huffman coding.   **6M**

OR

10 **a** Give detail description about Arithmetic coding.   **6M**
  b Discuss the need for channel encoder and decoder.   **6M**

*** END ***