

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

B.Tech IV Year I Semester Regular Examinations February-2024

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 Discuss the method of image sensing and acquisition along with suitable diagrams. CO1 L2 6M
b Calculate the number of bits required to store a digitized image if image sizes are 8×8 , 32×32 for 8-bit pixel depth. CO1 L3 6M

OR

- 2 a List out the applications of image subtraction and image multiplication CO1 L2 6M
b Explain the Linear versus Nonlinear operations on digital images with relevant equations. CO1 L2 6M

UNIT-II

- 3 a Define 2D – Discrete Cosine Transform with equations. CO2 L1 6M
b Deduce the Discrete Cosine Transform basis matrix for $N = 4$. CO2 L4 6M

OR

- 4 a Deduce the basis matrix of Walsh Transform for $N = 4$. CO2 L4 6M
b Calculate Walsh transform for the given image. $f(x, y) = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$ CO2 L3 6M

UNIT-III

- 5 a Discuss the mechanics of spatial filtering with suitable diagram. CO3 L2 6M
b Illustrate the smoothing spatial filters along with the required expressions. CO3 L2 6M

OR

- 6 a Illustrate the method of converting colors from HSI to RGB. CO3 L2 6M
b Draw the functional block diagram of pseudo colour processing and explain each block. CO3 L1 6M

UNIT-IV

- 7 a Explain the Uniform and Impulse noises with their PDF expressions. CO4 L1 6M
b Explain the Normal and Gamma noises with their PDF expressions. CO4 L2 6M

OR

- 8 a Give the importance of image segmentation in image processing. CO5 L2 6M
b Explain the Region based Approach for image segmentation. CO5 L2 6M

UNIT-V

- 9 a Differentiate lossy compression process and lossless compression process. CO6 L2 6M
b Explain the functional block diagram of a general image compression system with neat sketch. CO6 L2 6M

OR

- 10 a Compare the adaptive transform coding and non- adaptive transform coding. CO6 L2 6M
b Discuss the different Image Formats and compression standards. CO6 L2 6M

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