

ANDHRA LOYOLA INSTITUTE OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
ACADEMIC YEAR: **2019-20**
IV B.Tech ECE SEM: I SUBJECT: DIGITAL IMAGE PROCESSING
EACH QUESTION CARRIES 10MARKS

UNIT –I

1. Explain the fundamental steps in digital image processing?
2. Explain about components of an image processing system?
3. List the applications of digital image processing?
4. Explain about elements of visual perception?
5. Explain about image sampling and image quantization.
6. Explain about DFT of one variable and two variables?
7. State and prove the properties of 2-D DFT/FT
8. Discuss about DCT and write the properties?
9. Explain walsh transform in detail?
10. Explain Haar transform in detail and obtain Haar transform matrix for $N=8$?

UNIT-II

1. Briefly explain about image enhancement using point processing techniques?
2. Explain about histogram specification and histogram equalization?
3. Explain about image smoothing and sharpening using spatial filters?
4. Write short notes on homomorphic filtering?
5. Write short notes on unsharp masking ?
6. Write short notes on high boost filtering?
7. Explain the basics of filtering in frequency domain with block diagram?
8. Compare frequency domain methods and spatial domain methods used in image enhancement?
9. Explain smoothing and sharpening methods in frequency domain?
10. Write short notes on gradient and laplacian operator?

UNIT-III

1. What is meant by image degradation ? Discuss various possibilities for image degradation?
2. Explain the model of image degradation /restoration process?
3. Discuss about various noise models?
4. Explain in detail about restoration filters used when the image degradation is due to noise only using spatial filtering?
5. Explain various filters for periodic noise reduction or removal?
6. Write short notes on inverse filtering?
7. Explain about mean square error (wiener) filtering?
8. Explain about constrained least squares restoration?
9. Briefly explain about geometric mean filter?
10. Write short notes on adaptive median filter?

UNIT-IV

1. With the help of neat diagram, explain image pyramid?
2. Write about haar wavelet transform?
3. Explain 1-D wavelet transform and give the applications
4. Describe about wavelet packets?
5. Define image compression and explain about various redundancies in images?
6. Draw the image compression model and explain?
7. Explain image compression using Huffman coding?
8. Explain about lossy predictive coding with neat diagram?
9. With the help of neat block diagram explain the lossless predictive coding?
10. Describe the basic components of image watermarking with a neat block diagram?

UNIT-V

1. Explain the concept of dilation and erosion with suitable examples?
2. Explain the concept of opening and closing operations with examples?
3. Discuss about hit-or-miss transformations?
4. Explain the basic morphological algorithms?
5. Explain about various gray-scale morphological techniques?
6. Explain image segmentation and its use in image processing?
7. Define various discontinuities in image?
8. Discuss edge detection algorithms in detail?
9. Discuss image segmentation based on various thresholding techniques?
10. Write about region-based segmentation?
11. Describe watershed segmentation algorithm

UNIT-VI

1. Define the terms
 - a) luminance b) radiance and c) trichromatic coefficients
2. Describe the various color models available in image processing?
3. Give the procedure for conversion from HSI to RGB and RGB to HSI color models
4. Explain pseudo color image processing?
5. Discuss about full color image processing?
6. Explain about color transformations?
7. Write short notes on color image smoothing and sharpening?
8. Explain various color segmentation techniques in detail ?
9. Explain about noise in color images ?
10. Explain the concept of color image compression?