19APE0406

B.Tech. DEGREE EXAMINATION, FEBRUARY/MARCH 2023.

Seventh Semester

(ECE)

DIGITAL IMAGE PROCESSING

(RU19 Regulations)

Time : 3 Hours *Max. Marks : 70*

PART — A

(Compulsory questions) **(10 × 2 = 20 Marks)**

1. Answer the following :

(a) Define spatial resolution and intensity resolution.

(b) Define Connectivity.

(c) What is meant by an intensity level slicing?

(d) Define histogram of an image and write its significance.

(e) Define and classify the Discontinuities.

(f) What is thresholding?

(g) Draw the block diagram of general image compression system.

(h) What is the need for image compression?

(i) What are the advantages of color image processing?

(j) Write the applications of RGB color model.

PART — B

Answer ONE Full question from each Unit. **(5 × 10 = 50 Marks)**

All questions carry equal marks.

UNIT I

2. (a) Explain the various distance measures used in image processing.

(b) List out the various components used in general purpose image processing system and explain it.

Or

3. (a) Explain about Image sampling and Quantization.

(b) Explain about Image acquisition Technics.

Turn Over

UNIT II

4. (a) Explain about contrast stretching and Bit-Plane slicing.

(b) Prove the following properties of 2D-DFT:

(i) Translation and Rotation

(ii) Periodicity.

Or

5. (a) Explain about notch filtering and write the use of it in image processing.

(b) With the necessary equations, explain the concept of homomorphic filtering.

UNIT III

6. (a) What is the need for edge linking and explain about edge linking using local processing?

(b) Explain about morphological opening operation with example.

Or

7. (a) Write the applications of segmentation and explain threshold based segmentation.

(b) Define image gradient and explain how it is useful for edge detection.

UNIT IV

8. (a) With an example, explain the concept of Run Length coding.

(b) Discuss about wavelet functions used in multi resolution analysis.

Or

9. (a) Draw the diagram of two dimensional, four band filter bank for subband imagecoding and explain it.

(b) Draw the block diagram of lossy predictive model and explain it.

UNIT V

10. (a) Discuss about histogram processing of color images.

(b) Explain about color image segmentation in RGB space.

Or

11. (a) Discuss about converting colors from RGB to HSI.

(b) Explain about color image smoothing with necessary equations.
