C **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 99454

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2024

Open elective

Civil Engineering

19UEC954– Fundamental of Digital Image Processing

(Common to CSE, EEE, Mechanical, IT, Chemical, Agriculture and Biomedical Engineering)

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5x 1 = 5 Marks)

1. At what points, a continuous image is digitized? CO1- U

   (a) Sampling (b) Vertex (c) Contour (d) Random

2. The procedure done on a digital image to alter the values of its individual pixels known as _____ CO3- U

   (a) Geometric Spatial Transformation (b) Single Pixel Operation

   (c) Image Registration (d) Neighbour hood Operations

3. For line detection we use _____ mask CO4- U

   (a) gaussian (b) laplacian (c) ideal (d) butterworth

4. Mean filter reduce noise using CO5- U

   (a) sharpening (b) blurring (c) restoration (d) acquisition

5. Closing with rolling SE CO6- U

   (a) Sharps (b) Shrinks (c) Smooths (d) Deletes

PART – B (5 x 3= 15 Marks)

6. List the applications of color models? CO1-U

7. Give any two properties of DCT CO2- U

8. Explain boundary and region descriptors CO4- U

9. Explain singular value decomposition CO5- U

10. What are the two main operations of Morphology CO6- U

PART – C (5 x 16= 80Marks)

11. (a) Explain the basic relationship between pixels CO1- U (16)

Or

(b) Explain 1D and 2D Discrete Fourier Transforms and their Properties in detail CO2- U (16)

12. (a) Explain histogram and histogram equalization with neat diagrams in detail. CO3- U (16)

Or

(b) Explain the concept of image smoothing in frequency domain CO3- U (16)

13. (a) Explain image degradation model /restoration process in detail. CO4- U (16)

Or

(b) Describe the various geometric transformations used for image restoration CO4- U (16)

14. (a) Discuss in detail about the threshold selection based on boundary characteristics and explain the techniques that uses thresholds in image segmentation CO5- U (16)

Or

(b) Explain region based segmentation using region splitting and merging with an example. CO5- U (16)

15. (a) Explain how erosion and dialation in performed in image processing CO6- U (16)

Or

(b) Elaborate the morphological algorithm for thinning in detail along with boundary Extraction algorithm CO6-U (16)