21PCS314

FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2021 ONLY) **REG.NO**

NGM COLLEGE (AUTONOMOUS) POLLACHI

END-OF-SEMESTER EXAMINATIONS: DECEMBER-2022

M. Sc-Computer Science **MAXIMUM MARKS: 70**

III SEMESTER **TIME: 3 HOURS**

DIGITAL IMAGE PROCESSING

SECTION – A (10 X1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS

MULTIPLE CHOICE QUESTIONS (K1)

1. The origin of an image is located at_____ corner.
   a) Top left b) Top right c) Bottom left d) Bottom right

2. Which transformation maps a narrow range of low gray levels input image into a wider range of output levels?
   a) Log b) Inverse Log c) Power law d) Histogram equalization

3. Periodic noises in an image arise from_____.
   a) Electrical inference b) Electro-mechanical inference
   c) Gamma inference d) Both (a) & (b)

4. Coding redundancy is based on_____.
   a) Coordinates b) Intensities c) Temporal data d) Matrix

5. _____ is a set of connected pixels that lie on the boundary between two regions.
   a) Line b) Point c) Edge d) Flat segment

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES (K2)

6. What are the two classes of receptors in the surface of Retina?

7. Define: Convolution.

8. What is meant by Restoration?

9. Define Compression Ratio (C_R)

10. What is meant by Image Gradient?

(CONTD …. 2)

SECTION – B (5 X 4 = 20 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) Brief a on image acquisition using sensor arrays.

(OR)

b) Distinguish between Image Enhancement and Image Restoration.

12. a) Explain the use of Histogram equalization.

(OR)

b) Illustrate Smoothing spatial filters.

13. a) Compare Bandreject filters with Bandpass filters.

(OR)

b) What is Minimum Mean Square Error filtering? Explain.

14. a) What are the three types of data redundancy? Explain

(OR)

b) Illustrate the one level decomposition of an image using 2D wavelet transform.

15. a) Demonstrate different line detection masks.

(OR)

b)Write the steps for region splitting and merging procedure.

SECTION - C (4 X 10 = 40 MARKS)

ANSWER ANY FOUR OUT OF SIX QUESTIONS

(16th QUESTION IS COMPULSORY AND ANSWER ANY THREE QUESTIONS (FROM Qn. No : 17 to 21) (K4 (Or) K5)

16. Explain the components of image processing system with neat block diagram.

17. Demonstrate the important relationship between pixels in a digital image.

18. Elaborate the role of arithmetic and Logic operations in image enhancement.

19. Describe any five noise probability density functions with mathematical formulation.

20. Demonstrate Huffman coding with example data.

21. Discuss the concept of morphological watersheds based segmentation.