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Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S6 (R,S) Exam April 2025 (2019 Scheme)

Course Code: MRT304

Course Name: DIGITAL IMAGE PROCESSING & MACHINE VISION

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks.

Marks

- | | | |
|----|---|-----|
| 1 | Explain the basic relationship between pixels | (3) |
| 2 | Explain Image Subtraction | (3) |
| 3 | Explain any two noise models | (3) |
| 4 | Elucidate about the principle of image enhancement using Histogram equalization | (3) |
| 5 | Differentiate lossy and lossless compression | (3) |
| 6 | Define compression ratio. Explain data redundancy in detail | (3) |
| 7 | Explain Thresholding? Differentiate between single thresholding and multilevel thresholding | (3) |
| 8 | Describe the image segmentation and applications of image segmentation | (3) |
| 9 | Classify machine vision systems based on their level of complexity | (3) |
| 10 | Write a short note on advantages and application of machine vision | (3) |

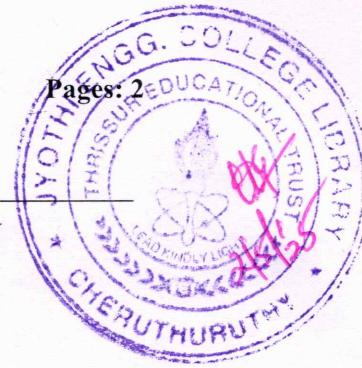
PART B

Answer any one full question from each module, each carries 14 marks.

Module I

- 11 a) With reference to a digital image, describe the following terms (14)
- i) Neighbour hood
 - ii) Adjacency

OR



- 12 a) Elucidate about the principle of image enhancement using (14)
i) Histogram equalisation
ii) Image subtraction

Module II

- 13 a) Discuss image restoration process based on Minimum mean square error (14)
filtering

OR

- 14 a) Appraise the three methods for the estimation of unknown degradation function (14)
using blind image restoration method

Module III

- 15 a) Illustrate wavelet coding image with neat sketches (7)
b) Illustrate LZW coding with suitable example (7)

OR

- 16 a) State the coding procedure used in Huffman coding with suitable example (14)

Module IV

- 17 a) Evaluate about chain codes approach of boundary representation (14)

OR

- 18 a) Evaluate on boundary descriptors (14)

Module V

- 19 a) Explain the components of a machine vision system (7)
b) With neat sketch explain CCD camera (7)

OR

- 20 a) Describe machine vision. Also explain low level and high level vision. (14)
