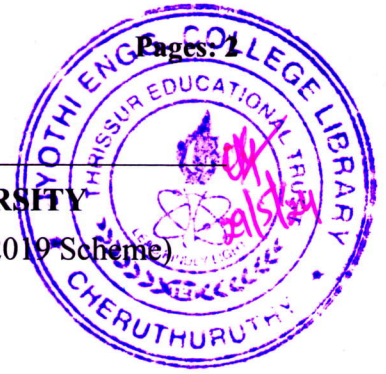


Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth Semester B.Tech Degree (R,S) Examination May 2024 (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 | Distinguish 4 and 8 neighbors of a pixel. | (3) |
| 2 | Write a short note on basic grey level transformation | (3) |
| 3 | Elucidate the concept of inverse filtering. | (3) |
| 4 | Explain the block diagram of image degradation/restoration model. | (3) |
| 5 | Define pixel of an image | (3) |
| 6 | Define gradient of an image | (3) |
| 7 | Summarize on boundary representation. Differentiate external representation and internal representation | (3) |
| 8 | Describe the image segmentation and applications of image segmentation | (3) |
| 9 | Describe the fundamental steps in image digitization | (3) |
| 10 | Summarize on the classification of machine vision | (3) |

PART B*Answer any one full question from each module, each carries 14 marks.***Module I**

- | | | |
|----|--|-----|
| 11 | a) Elucidate the concept of sampling and quantization of image | (7) |
| | b) Elucidate about the principle of image enhancement using Histogram equalisation | (7) |

OR

- | | | |
|----|---|------|
| 12 | a) Formulate the Walsh transform basis for N=4. | (14) |
|----|---|------|

Module II

- | | | |
|----|---|------|
| 13 | a) Evaluate on constrained least mean square filtering. | (14) |
|----|---|------|

OR

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

Module III

- 15 a) Explain bit plane coding (7)
b) Illustrate LZW coding with suitable example. (7)

OR

- 16 a) Illustrate wavelet coding image with neat sketches. (14)

Module IV

- 17 a) Evaluate on boundary descriptors (14)

OR

- 18 a) Explain the following (14)
a) Edge detection
b) Thresholding

Module V

- 19 a) With neat sketch explain CCD camera and its purpose. (7)
b) Interpret in detail about the steps in feature extraction (7)

OR

- 20 a) Explain machine vision and also write a detailed description about low level and high level vision (7)
b) A digitization process is often used to convert analog data into numerical representation'. Examine the statement (7)
