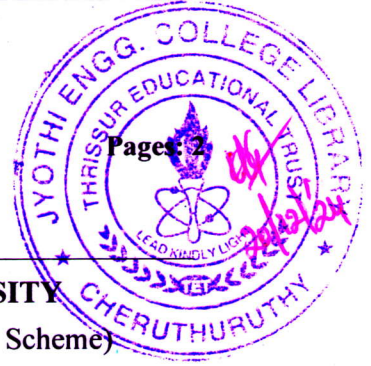


B

1200MRT304122401



Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
B.Tech Degree S6 (S, FE) Examination December 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 | Explain about the diagonal neighbours of a pixel. | (3) |
| 2 | What is the need for image transform? Explain. | (3) |
| 3 | Explain in detail about homomorphic filtering. | (3) |
| 4 | Discuss briefly about image restoration. | (3) |
| 5 | Give a brief note on Psycho-visual Redundancy. | (3) |
| 6 | List the features of digital image water marking. | (3) |
| 7 | Explain about boundary segments. | (3) |
| 8 | Explain about any three simple descriptors used to describe region. | (3) |
| 9 | Write notes on 3D Vision. | (3) |
| 10 | Mention three applications of machine vision systems. | (3) |

PART B

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

Module I

- 11 Define histogram of an image. Perform histogram equalization on the given digital image. Plot the histogram of original and processed image. (14)

4	4	4	4	4
3	4	5	4	3
3	5	5	5	3
3	4	5	4	3
4	4	4	4	4

OR

- 12 Compute the DCT matrix for N=4. (14)

Module II

- 13 Analyse 3x3 mean filter in frequency domain and show that it behaves like a low pass filter. (14)

OR

- 14 Explain the various noise models and plot their probability density function with necessary expressions. (14)

Module III

- 15 a) Explain the coding procedure used in Huffman coding with suitable example. (9)
b) Give a brief note on bit-plane coding. (5)

OR

- 16 a) Explain JPEG image compression with neat sketches. (9)
b) With a neat block diagram, explain lossless predictive coding technique. (5)

Module IV

- 17 Explain in detail about region based image segmentation. (14)

OR

- 18 What are edge models? Explain different edge models. Explain the gradient operators used for the calculation of first order derivative. (14)

Module V

- 19 Draw and explain the block diagram of a simple machine vision system. (14)

OR

- 20 a) With a neat sketch explain the working of CCD camera. (10)
b) List the various classification of machine vision. (4)
