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Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

Sixth Semester B.Tech Degree (S, FE) Examination January 2024 (2015 Scheme)

**Course Code: MR304**

**Course Name: DIGITAL IMAGE PROCESSING AND MACHINE VISION**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer all questions, each carries 5 marks.*

- |   |   |   |
|---|---|---|
| 1 | Elucidate the process of image formation in eye.  | 5 |
| 2 | What is power-law transformations?  | 5 |
| 3 | List out any two noise probability density functions used in image processing applications. | 5 |
| 4 | Explain the block diagram of wavelet coding.  | 5 |
| 5 | Illustrate the effect of illumination on thresholding using simple model                    | 5 |
| 6 | Differentiate between single thresholding and multilevel thresholding.                      | 5 |
| 7 | Write briefly about CCD camera working principle  | 5 |
| 8 | What is low level machine vision?   | 5 |

**PART B**

*Answer any three questions, each carries 10 marks.*

- |    |   |    |
|----|---|----|
| 9  | Describe the basic concepts in in generating digital image and representing it.                       | 10 |
| 10 | What is meant by histogram specification? Explain.  | 10 |
| 11 | What is the difficulty in Weiner filtering? How it is overcome in constrained least square filtering? | 10 |
| 12 | With an example, explain the steps involved variable length coding                                    | 10 |
| 13 | Elaborate in detail about the concept of pseudo inverse filtering.                                    | 10 |

**PART C**

*Answer any two questions, each carries 15 marks.*

- |    |   |    |
|----|---|----|
| 14 | Discuss about the approaches for implementing first order derivative for edge detection | 15 |
| 15 | a) How the Fourier descriptors are used to detect the boundary?                         | 8  |
|    | b) Write short notes on Topological descriptors.  | 7  |
| 16 | a) Narrate in detail about image acquisition and digitization                           | 7  |
|    | b) Write short notes in CID camera?   | 8  |
| 17 | Explain in detail about feature extraction.   | 15 |

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