Reg No.:_____ Name:_____

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

B.Tech Degree S6 (S,FE) Examination December 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 | | Define neighbours of a pixel. | (3) |
| 2 | | Write about any two geometric transformations | (3) |
| 3 | | Compare smoothing and sharpening in image enhancement | (3) |
| 4 | | Describe basic frequency domain enhancement with block diagram | (3) |
| 5 | | Explain redundancies in image compression | (3) |
| 6 | | Differentiate between lossy and lossless compression | (3) |
| 7 | | What is edge detection? List two types of edge detection models | (3) |
| 8 | | Give a brief description about image segmentation | (3) |
| 9 | | Define 1D and 3D Vision. | (3) |
| 10 | | List any six applications of machine vision | (3) |

### PART B

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

**Module I**

| | | | |
|---|---|---|---|
| 11 | a) | Explain in detail about fundamental steps in image processing with block diagram | (14) |

**OR**

| | | | |
|---|---|---|---|
| 12 | a) | Construct Walsh basic for N=8 | (14) |

**Module II**

| | | | |
|---|---|---|---|
| 13 | a) | What is homomorphic filter and explain its procedure with neat block diagram | (14) |

**OR**

| | | | |
|---|---|---|---|
| 14 | a) | With necessary equations and graph explain the noise models | (14) |

**Module III**

| | | | |
|---|---|---|---|
| 15 | a) | Illustrate wavelet coding image with neat sketches. | (14) |

**OR**

| | | | |
|---|---|---|---|
| 16 | a) | Explain Huffman coding procedure with suitable example | (14) |

**Module IV**

17 a) Discuss in detail about thresholding (14)

**OR**

18 a) Explain in detail any two boundary representation schemes and illustrate with examples. (14)

**Module V**

19 a) Define machine vision and also compare low level and high level machine vision (14)

**OR**

20 a) Explain in detail about components of machine vision system with neat block diagram (14)

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