**18EID31**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular/Supplementary) DEGREE EXAMINATION** | | | |
| **November,2022** | **Electronics and Instrumentation Engineering** | | |
| **Seventh Semester** | **Digital Image Processing** | | |
| **Time:** Three Hours | | **Maximum: 5**0 Marks | |
| *Answer Question No. 1 Compulsorily.* | | | (10X1 = 10 Marks) |
| *Answer* ***ANY ONE*** *question from each Unit.* | | | (4X10=40 Marks) |

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| 1. | a) | What is the need for image processing? | CO1(BL1) | |  |
|  | b) | List the significant advantages of image wavelet transforms. | CO1(BL1) | |  |
|  | c) | Define image sampling | CO2(BL1) | |  |
|  | d) | Draw the image negative transform curve | CO2(BL1) | |  |
|  | e) | Differentiate image enhancement and image restoration | CO2(BL1) | |  |
|  | f) | What are the advantages of a Wiener filter over an inverse filter? | CO1(BL1) | |  |
|  | g) | Define compression ratio | CO3(BL1) | |  |
|  | h) | What is variable length code | CO3(BL1) | |  |
|  | i) | What is meant by image segmentation | CO4(BL1) | |  |
|  | j) | Name any two boundary descriptors | CO4(BL1) | |  |
| **Unit - I** | | | | | |
| 2. | a) | List out the fundamental steps in digital image processing which can be applied to images | CO1(BL1) | **5M** | |
|  | b) | Discuss about 2D – Discrete Cosine Transform with relevant mathematical functions. | CO1(BL1) | **5M** | |
|  |  | **(OR)** |  |  | |
| 3. | a) | Explain about image sampling and quantization process with proper steps. | CO1(BL1) | **5M** | |
|  | b) | Explain about the basic pixel relationships and distance measures between pixels in a digital image | CO1(BL1) | **5M** | |
| **Unit - II** | | | | | |
| 4. | a) | What is histogram of a digital image. Explain histogram Equalization process. | CO2(BL1) | **5M** | |
|  | b) | Develop Image Enhancement by point processing method. | CO2(BL2) | **5M** | |
|  |  | **(OR)** |  |  | |
| 5. | a) | Discuss about any two types of sharpening filters in frequency domain along with the required expressions. | CO2(BL1) | **5M** | |
|  | b) | Explain the concept of Laplacian in frequency domain filtering of images. | CO2(BL1) | **5M** | |

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| **Unit - III** | | | | |
| 6. | a) | What is redundancy in image compression? Discuss the importance of data redundancies. | CO3(BL1) | **5M** |
|  | b) | What are the different noise model explain any three | CO3(BL1) | **5M** |
|  |  | **(OR)** |  |  |
| 7. | a) | Explain Error free compression and lossy compression techniques. | CO3(BL1) | **5M** |
|  | b | Explain the Run Length Coding with respect to image compression |  |  |
| **Unit - IV** | | | | |
| 8. | a) | Explain about region based segmentation in detail. | CO4(BL2) | **5M** |
|  | b) | Analyze the basic Fourier descriptors | CO4(BL4) | **5M** |
|  |  | **(OR)** |  |  |
| 9. | a) | Explain the role of thresholding in segmentation | CO4(BL1) | **5M** |
|  | b) | Describe the Shape numbers as boundary descriptor | CO4(BL3) | **5M** |

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