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|  | <b>VASIREDDY VENKATADRI INSTITUTE OF TECHNOLOGY<br/>NAMBURU (AUTONOMOUS)</b> |                                   |
|   | <b>YEAR/SEM : IV – B.Tech - I-Sem</b>  | <b>NAME OF THE EXAM : MID – I</b> |
|   | <b>SUBJECT : DIP</b>   | <b>SUBJECT CODE : R1641042</b>    |
|   | <b>BRANCH : ECE</b>  | <b>DATE : 23-11-2021</b>          |

**ANSWER ALL QUESTIONS**


**Set No: 1**

**Time : 90 Minutes**

**Max. Marks : 30**

|           |           |   | CO | BL | PO | Marks |
|-----------|-----------|---|----|----|----|-------|
| <b>1.</b> | <b>a.</b> | Explain the fundamental steps in digital image processing which can be applied to images.   | 1  | 1  | 1  | 5     |
|           | <b>b.</b> | Explain about Hadamard transform and determine the Hadamard matrix for order $N = 8$ .  | 1  | 4  | 2  | 5     |
| <b>2.</b> | <b>a.</b> | Explain the use of first derivative for image enhancement by taking a $3 \times 3$ region of image using the magnitude of the gradient. | 2  | 3  | 2  | 5     |
|           | <b>b.</b> | Define histogram equalization. Explain the procedure for histogram equalization.  | 2  | 2  | 1  | 5     |
| <b>3.</b> | <b>a.</b> | Explain the periodic noise reduction by frequency domain filtering with respect to notch filter.  | 3  | 1  | 1  | 5     |
|           | <b>b.</b> | What is the purpose of image restoration? Explain the model of image degradation and restoration process using suitable block diagram.  | 3  | 2  | 1  | 5     |

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**ANSWER ALL QUESTIONS**


**Set No: 2**

**Time : 90 Minutes**

**Max. Marks : 30**

|           |           |   | CO | BL | PO | Marks |
|-----------|-----------|---|----|----|----|-------|
| <b>1.</b> | <b>a.</b> | List out the various components used in general purpose image processing system and explain it.                 | 1  | 1  | 1  | 5     |
|           | <b>b.</b> | What is the need of image transform? List out various transform used in image processing.                       | 1  | 2  | 2  | 5     |
| <b>2.</b> | <b>a.</b> | Discuss about Log transformation and Power Law transformation, and write their applications.                    | 2  | 4  | 2  | 5     |
|           | <b>b.</b> | Discuss about image smoothing in the frequency domain using Butterworth low pass filters.                       | 2  | 4  | 1  | 5     |
| <b>3.</b> | <b>a.</b> | Discuss about image restoration using order static filters.   | 3  | 2  | 2  | 5     |
|           | <b>b.</b> | What is an inverse filtering? Explain how it is useful for image restoration and write the disadvantages of it. | 3  | 1  | 1  | 5     |

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**ANSWER ALL QUESTIONS**

**Set No: 3**

**Time : 90 Minutes**

**Max. Marks : 30**

|           |           |  | CO | BL | PO | Marks |
|-----------|-----------|--|----|----|----|-------|
| <b>1.</b> | <b>a.</b> | Discuss the image acquisition using a single sensor, sensor strips and sensor arrays.      | 1  | 1  | 1  | 5     |
|           | <b>b.</b> | Prove the following properties of 2D-DFT:<br>(i) Translation and Rotation (ii) Periodicity | 1  | 4  | 1  | 5     |
| <b>2.</b> | <b>a.</b> | Discuss how the various filter masks are generated to sharpen images in spatial filters.   | 2  | 3  | 2  | 5     |
|           | <b>b.</b> | Explain about notch filtering and write the use of it in image processing.                 | 2  | 2  | 1  | 5     |
| <b>3.</b> | <b>a.</b> | Explain about adaptive median filter and write the advantages of it.                       | 3  | 1  | 1  | 5     |
|           | <b>b.</b> | Explain about image restoration using minimum mean square error filtering.                 | 3  | 2  | 2  | 5     |

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