**SHAMBHUNATH INSTITUTE OF ENGINEERING & TECHNOLOGY**

**Department of Computer Science & Engineering**

**DIP-NCS-801**

**Assignment -1 (2016-17)**

**Note**- Attempt All question.

**Q.1.** Define the term Image Restoration & Image Degradation?

**Q.2.** What is meant by Gaussian noise?

**Q.3**. Write a short Note on

 i. Contrast Stretching ii. Spatial Domain Methods

 iii. Histogram Specification

**Q.4** Explain Tern Discrete Fourier transformation with suitable example? Determine the Discrete Fourier transform (DFT) of f(x) ={0,1,2,1}?

**Q.5** What is Image Enhancement in Frequency domain Also Derive Fourier transform for 1D & 2D Case?

**Q.6.** Explain the basis of filtering in frequency domain method with its advantage & disadvantage?

**Q.7.** Equalize the Given histogram?

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Gray | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Pixels | 790 | 1023 | 850 | 656 | 329 | 245 | 122 | 81 |

Q.8. Show that a high pass filtered image can be obtain in the spatial domain as

 High pass = Original –Low pass?

Q.9. The following matrix defines a 5\*5 images f(x,y).The centre pixel f(2,2) is Underlined. Suppose smoothing is done to the image using 3\*3 neighborhood in the spatial domain ,then will be the new value of f(2,2) using the:

1. The mean filter  **2**.median filter **3**. Min filter **4.** Max filter

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 0 | 1 | 0 | 6 | 7 |
| 2 | 0 | 1 | 6 | 5 |
| 1 | 1 | 7 | 5 | 6 |
| 1 | 0 | 6 | 6 | 5 |
| 2 | 5 | 6 | 7 | 6 |

 **Q.10.** What is Image Sensor ? & How many types of Image?

 **Q.11**.What Do you understand by Fourier Transformation?

**Q.12.** Obtain the digital Negative of the following 8 bits per pixel-BPP Image.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 121 | 157 | 129 | 159 | 125 |
| 156 | 197 | 138 | 181 | 171 |
| 119 | 251 | 240 | 252 | 127 |
| 240 | 187 | 198 | 167 | 201 |
| 109 | 107 | 251 | 119 | 241 |

**Q.13**.What is sampling & Linear stretching?

**Q.14**. Differentiate between Zooming & Shrinking?

**Q.15.** Explain Homomorphic filtering ?