

Paper / Subject Code: 88944 / Image Processing and Machine Vision Lab

Time: 3 Hrs

Total marks: 80

Instructions

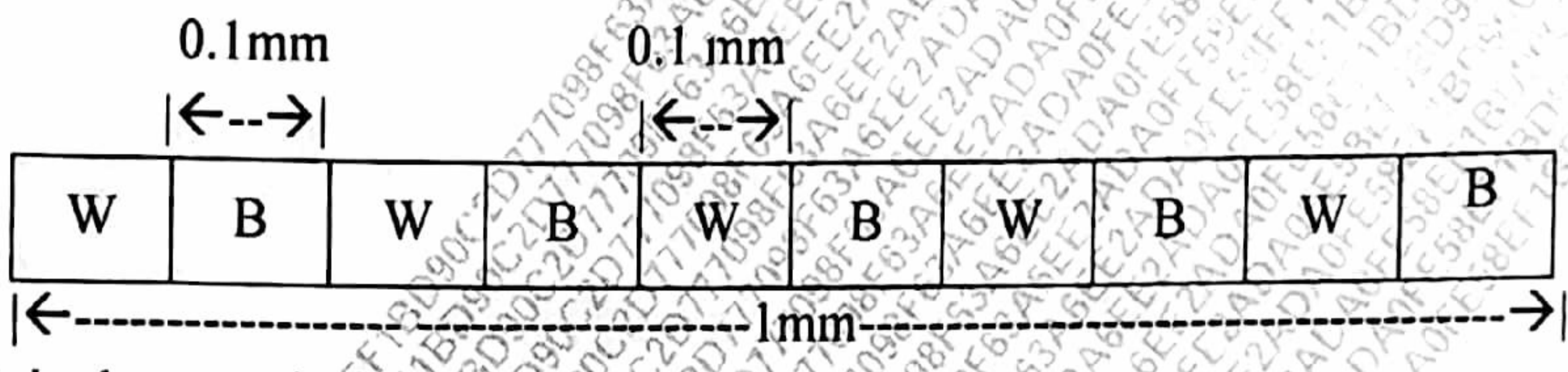
- Q1 is compulsory
- Solve any 3 from remaining
- Assume suitable data if necessary

Answer the following

1. Identify the noise in following image and remove it by filtering 4M

19	0	20	21
21	150	25	26
22	23	24	27

2. For given figure, Improve and reduce the spatial resolution, consider W= White line, B = Black line, Size of each white and black line is 0.1 mm, total length is 1 mm. 4M



3. Explain the steps in digital image processing 4M

4. Write Hadamard transform matrix for N=4 and its application 4M

5. Explain the effect of illumination in thresholding 4M

6. 1. Find Haar basis for N=4 10M

2. Explain image enhancement using frequency domain filtering 10M

7. For given image find and equalize histogram 07M

10	12	8	9
10	12	12	14
12	13	10	9
14	12	10	12

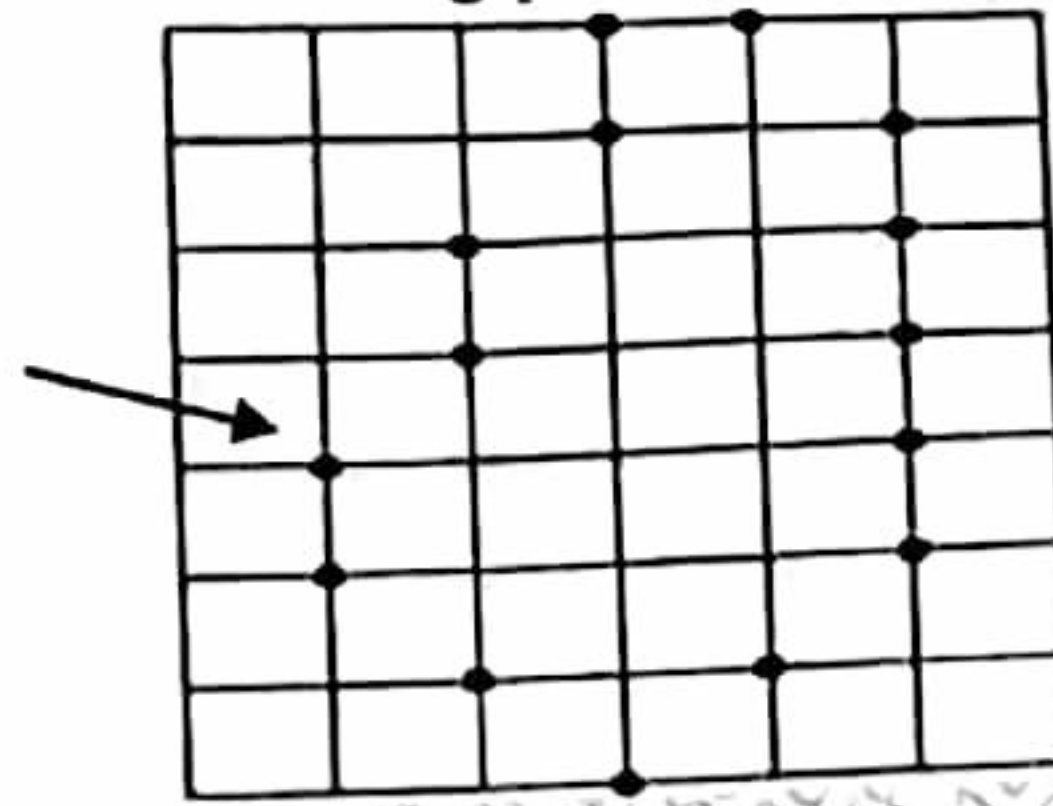
8. Apply Averaging filter on given image Use pixel replication for padding. 05M

4	8	9
12	15	18
30	32	46

9. Explain 1) Sharpening using 2nd order derivative 2) Unsharp masking and high boost filtering 8M

Q4

1. Draw PDF and write equation for following noise models
 - a) Gaussian Noise
 - b) Rayleigh noise
2. Find the chain code, shape number for given image using 8-connectivity. Use anti-clockwise direction. (Arrow shows starting point)



3. Find the border for image F given below using 2 different structural elements A and B respectively

F=

```

00111101110
01111111110
01111111110
11110111111
01111111111
01111111110
01111111110
00000111000
    
```

A=

0	1	0
1	1	1
0	1	0

B=

1	1	1
1	1	1
1	1	1

Q5

1. Explain SVM in detail?
2. Explain canny edge detection algorithm with proper steps

Q6

- Write Short Notes on any 2 of the following
1. Geometric border representation
 2. B-spline algorithm
 3. Statistical texture description methods
