B.TECH VIth SEMESTER EXAMINATION

DIGITAL IMAGE PROCESSING

MM: 70 **Time: 2 hours**

Note: The question paper consists total 19 questions out of which 14 questions is to be solved. Each question carries 5 marks.

1. A triangle is marked by the points (1, 1) , (5, 5) and (10, 10)

   a) Apply translation of $\delta x = 3$ and $\delta y = 4$.

   b) Apply rotation with degree 180.

2. Find the Convolution of the following streams of data:

F=

7	2	3
2	2	1
2	1	1

and I =

1	1
1	1

3. Consider two pixels p and q whose coordinates are (0,0) and (6,3). Calculate the D_e, D_4 and D_8 distance between the pixels p and q.

4. What is the difference between image convolution and correlation? Is there any difference between them in image processing?

5. Write down the difference between Lossless Compression and Lossy Compression.

6. Find the forward and inverse transformation for the following image using Hadamard transform:

F=

1	2
2	1

7. Write down the properties of Fourier transforms.

8. Write down the advantages of Image Transform.

9. Apply the DCT to the following sequence of numbers: x = {1,2,1,1}.

10. Perform histogram specification on the 8 X 8 , eight level image described in below table:

Grey Level	0	1	2	3	4	5	6	7
No. of Pixel	790	1023	850	656	329	245	122	81

The target histogram is as below:

Grey Level	0	1	2	3	4	5	6	7
No. of Pixel	0	0	0	614	819	1230	819	614

11. Explain how Guassian filter are used for Image smoothing in Spatial Domain.

12. Explain Ideal high pass and Ideal low pass filters.

13. Define Prewitt Operator for Edge Detection.

14. Explain Global Thresholding Algorithm.

15. For the given image show the result of the split and merge algorithm.

5	6	6	7	7	7	6	6
6	7	6	7	5	5	4	7
6	6	4	4	3	2	5	6
5	4	5	4	2	3	4	6
0	3	2	3	3	2	4	7
0	0	0	0	2	2	5	6
1	1	0	1	0	3	4	4
1	0	1	0	2	3	5	4

16. Write down the algorithm for Hough transform.

17. What are the factors that can cause image degradation?

18. What is Median Filter? Which type of noise it can remove?

19. Write down the name of five application area of Digital Image Processing.

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