

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- OCTOBER-2019

PhD. I Semester

COURSE CODE: 16M1WEC231

MAX. MARKS: 25

COURSE NAME: ADVANCE DIGITAL IMAGE PROCESSING

COURSE CREDITS: 3

MAX. TIME: 1.5 Hours

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

Q1. For the image (I) given above:

$$I = \begin{array}{|c|c|c|c|c|} \hline 20 & 10 & 10 & 20 & 20 \\ \hline 15 & 488 & 15 & 150 & 5 \\ \hline 20 & 15 & 20 & 15 & 10 \\ \hline 20 & 18 & 2510 & 10 & 20 \\ \hline 15 & 20 & 20 & 10 & 10 \\ \hline \end{array}$$

- Determine the type of noise or distortions present in the image.
- Determine the enhancement method that could be used to remove the noise or distortions present (if any) in the image.
- Determine the resultant image obtained on implementing the method mentioned in part (b) on the image.
- Draw the histogram for the image obtained in part (c).
- Is it required to increase the contrast of the image obtained in part (c)? If yes, why and how?

[0.5+0.5+2+2+3 = 8] CO1 & CO2

Q2. With respect to images, explain the physical significance of high frequency and low frequency content present in an image? Also explain the steps to be followed to remove high frequency content present in the image.

[5] CO3

Q3. Explain the need of edge linking in image processing. Explain the two principal properties used for establishing similarity of edge pixels.

[4] CO5

Q4. Implement Otsu's Method to convert the image given below into binary images:

I=

0	0	4	4	4	5
0	1	3	4	2	4
1	3	1	2	1	3
4	4	3	1	0	0
5	4	3	1	0	0
5	5	4	3	1	0

[5] CO4 & CO6

Q5. Write 3X3 template for the following filters:

- Laplace Filter
- Sobel Filters
- Weighted Average Filter

[3] CO2