

COURSE CODE: 16M1WEC231

MAX. MARKS: 25

COURSE NAME: Advanced Digital Image Processing

COURSE CREDITS: 03

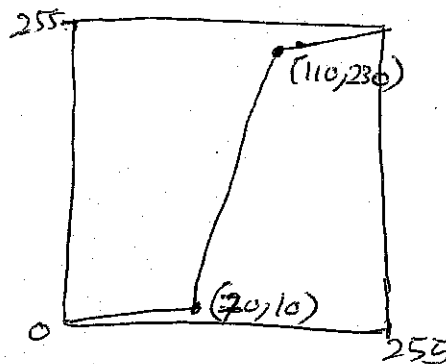
MAX. TIME: 1.5 HRS

*Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Marks are indicated against each question in square brackets.*

1. What do you understand by histogram of an image? How histogram can be used in segmentation process?

[5] CO2

2. Explain contrast stretching. Why it is needed to process the images? Explain the output image obtained after implementing the following transform on any given image.



[5] CO2

3. Consider the image, I given below:

$$I = \begin{bmatrix} 2 & 1 & 3 & 4 \\ 4 & 3 & 255 & 2 \\ 5 & 7 & 20 & 1 \\ 1 & 10 & 20 & 2 \end{bmatrix}$$

Evaluate the output image obtained on applying the following filters:

- Maximum Filter
- Median Filter
- Average Filter

[6] CO4

4. Consider an image given below:

$$I = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 255 & 255 & 255 & 0 & 0 \\ 0 & 0 & 255 & 255 & 255 & 0 & 0 \\ 0 & 0 & 255 & 255 & 255 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

What type of filters can be used to detect horizontal and vertical edges present (if any) in the image. Generate the image obtained after applying these filters.

[5] CO4

5. Explain the important of Fourier transform in image processing.

[4] CO3