Digital Image Processing

Lab Assignment – 1

Read the given images and perform the following operations:

1. Gray-level Mapping (input images)
   Mapping functions:
   i. $g(x, y) = f(x, y) + 10$
   ii. $g(x, y) = 0.5 * f(x, y) + 20$

2. Negative Transformation (input images 1,2,3)

3. Gamma Transformation (input image 11)
   Take the following values of γ : 0.50, 0.10, 2.0, 4.0

4. Logarithmic Mapping (input images 9,10). Calculate "*c*" first.

5. Exponential Mapping (input images 4,5,6,7,8). Calculate "*c*" first.

6. Intensity-level slicing (input image 15)

   Select appropriate intensity-level range to highlight the bright portion of the image.

7. Bit-plane slicing (input image 18)

   i. Output – images of bit plane 1,2,3,4,5,6,7,8
   ii. Reconstruct the image from bit plane images 5,6,7,8

8. Histogram Processing
   Write code for calculating the histogram of the image (input image 19).
   Display the output as the "*Histogram Graph*"

9. Contrast/Histogram Stretching (input image 20)

Note: Convert the color image to grayscale image if required.