Department of Physical Science
Faculty of Applied Science
In-course Assessment Examination - 01
IT3143 (P) - Digital Image Processing (P)

Nov 2024 **Time allowed – 45 minutes**

Instructions:

- *Save your file with your registration number (for e.g. 2020ICTXX) in Z drive.*
- *Find all the resources in the folder IT3143-Resources.*
- *You should use MATLAB programming language to write the programs.*

1. Consider the image 'cameraman.tif' Develop a method to improve the contrast of the image by following these steps in MATLAB:

    a. Create a 2x2 grid of subplots,
        i. In the first subplot, read and display the original image.
        ii. In the second subplot, display the image that scale the pixel values to fit a colormap and apply the gray colormap.
        iii. In the third subplot, add 100 to each pixel value in the image and display the modified image.
        iv. In the fourth subplot, read the image onion.png, convert it to a grayscale image, and display the output.

2. Consider the images 'toycars1.png' and 'toycars2.png' Perform the following arithmetic operations and display the outputs in subplots:

    a. Read and display the image toycars1.png.
    b. Read and display the image toycars2.png.
    c. Add the two images and display the result.
    d. Subtract the two images and display the result.
    e. Display the absolute difference between the two images.
    f. Multiply each pixel value in toycars1.png by 1.5 and display the result.
    g. Divide each pixel value in toycars2.png by 4 and display the result.
    h. Covert the toycars1.png image to a binary image and display the result.