

U.G. 5th Semester Examination - 2021

COMPUTER SCIENCE

[HONOURS]

Discipline Specific Elective (DSE)

Course Code : COM.SC-H-DSE-P-501

(Digital Image Processing)

Full Marks : 75

Time : 4 Hours

The figures in the right-hand margin indicate marks.

Marks distribution:

Experiment: 60, Viva: 10, Lab Notebook: 5

*Answer any **one** question to be selected by lottery.*

1. Write a program in C/C++/MATLAB/SCILAB to understand various image noise models and to write programs for
 - a) image restoration
 - b) Remove Salt and Pepper Noise
 - c) Minimize Gaussian noise
 - d) Median filter and Weiner filter
2. Write a program in C/C++/MATLAB/SCILAB for geometric transformation of image
 - a) Translation
 - b) Scaling
 - c) Rotation

- d) Shrinking
 - e) Zooming
3. Write a program in C/C++/MATLAB/SCILAB for image arithmetic operations
 - a) Addition of two images
 - b) Subtract one image from another image
 - c) Calculate mean value of image
 - d) Different Brightness by changing mean value
4. Write program to read and display digital image using MATLAB or SCILAB.
 - a) Resize given image
 - b) Convert given color image into gray-scale image
 - c) Convert given color/gray-scale image into black and white image
 - d) Separate color image in three R G and B planes
5. Write a program in C/C++/MATLAB/SCILAB for edge detection using different edge detection mask.
6. Write a program in C/C++/MATLAB/SCILAB to find histogram value and display histogram of a grayscale and color image.
7. Write a program in C/C++/MATLAB/SCILAB to enhance an image quality.
8. Write a program in C/C++/MATLAB/SCILAB for image enhancement using histogram equalization.

9. Write a program in C/C++/MATLAB/SCILAB to shows image rotation, scaling, and translation using Geometric transformations.
10. Write a program in C/C++/MATLAB/SCILAB image smoothing and sharpening.
11. Write a program in C/C++/MATLAB/SCILAB for wavelet transform on given image and perform inverse wavelet transform to reconstruct image.
12. Write a program in C/C++/MATLAB/SCILAB for morphological image operations-erosion, dilation, opening and closing.
13. Write a program in C/C++/MATLAB/SCILAB to provides the thresholding an image and the evaluation of its histogram using histogram equalization and illustrates the relationship among the intensities (gray levels) of an image and its histogram.
14. Write a program in C/C++/MATLAB/SCILAB for segmentation of an image using watershed transforms.
15. Write a program in C/C++/MATLAB/SCILAB to perform the Linear filtering using convolution in an image.
16. Write a program in C/C++/MATLAB/SCILAB to extract image attributes.
17. Write a program in C/C++/MATLAB/SCILAB for image negation.

18. Write a program in C/C++/MATLAB/SCILAB for histogram mapping and equalization.
