CSC321-2082(O) ✡

Exam Roll No.....

Tribhuvan University
Institute of Science and Technology
2082
✡

Bachelor Level / Third Year /Fifth Semester/Science
Computer Science and Information Technology (CSC321)
(Image Processing)
(OLD COURSE)

Full Marks: 60
Pass Marks: 24
Time: 3 hours.

Candidates are required to give their answers in their own words as for as practicable.
The figures in the margin indicate full marks.

Section A

Attempt any TWO questions. **(2×10 = 20)**

1. Differentiate between Discrete Fourier Transform (DFT) and Fast Fourier Transform (FFT). What is the purpose of using the Fourier transform in image processing? [5+5]
2. A 512×512 grayscale image is quantized using 8 bits. Calculate the storage space required. How would this change if the same image is quantized using 4 bits? Explain the impact on image quality. [6+4]
3. What is the difference between low-pass filter and high-pass filter in the spatial domain? Derive the filter mask for the Laplacian filter and write the algorithm for its implementation. [3+7]

Section B

Attempt any EIGHT questions. **(8 × 5 = 40)**

4. What is Run Length Encoding? Where is it used? [2.5+2.5]
5. What is histogram equalization in image enhancement? Describe. [5]
6. Define the terms dilation and erosion in morphological processing. [5]
7. Explain the contra-harmonic mean filters used in image restoration. [5]
8. Explain the Bit plane slicing technique for image enhancement. [5]
9. Explain how the Hough transform is useful in line detection. [5]
10. Describe how you implement the Gaussian High Pass Frequency domain filter for image smoothing in the frequency domain. [5]
11. Describe Region Growing in image segmentation. [5]
12. Discuss about neural network based image recognition. [5]