

Tribhuvan University
Institute of Science and Technology
2075
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Bachelor Level/Third Year/Six Semester/Science
Computer Science and Information Technology (CSc. 363)
(Image Processing)

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

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

Attempt any ten questions.

1. What is a digital image? Draw and explain the block diagram of a typical digital image processing system in brief. (1+5)
2. Define Discrete Cosine Transform (DCT). Differentiate between Discrete Fourier Transform (DFT) and Fast Fourier Transform (FFR). (2+4)
3. Explain the term "Log and inverse log transformation" techniques for the purpose of image enhancement. Explain the average spatial filter along with suitable algorithm for its implementation. (2+4)
4. Explain the term Contrast Stretching and the Histogram Equalization. (3+1)
5. What do you mean by Lossless Predictive Coding? Explain it with a suitable block diagram. (6)
6. Explain the detail procedure for implementing Butterworth Low Pass filter in Frequency domain. (6)
7. What is zooming? Explain the process of zooming by replication method. (6)
8. Explain in detail the region growing techniques for image segmentation. List the problems associated with region growing technique. (4+2)
9. What are components of a pattern recognition system? Explain with relevant diagrams. (6)
10. Derive the equation for Laplacian filter and write the algorithm for its implementation. (6)
11. Write short notes on: (3+3)
 - a) Neural Network
 - b) Global thresholding