

Tribhuvan University
Institute of Science and Technology
 2080
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Bachelor Level / Third Year /Fifth Semester/Science
Computer Science and Information Technology (CSC321)
 Image Processing
(NEW COURSE)

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.

Section A

Attempt any TWO questions.

[2×10 = 20]

- 1/ Explain different steps in digital image processing. Define neighbor of a pixel. How do you find the distances between pixels? [6 + 2 + 2]
2. Why do we need to enhance the image? How do you use histogram in image enhancement? Differentiate between log transformation and power log transformation. [2 + 4 + 4]
- 3/ Explain the properties of fourier transformation. Derive the relation for 1-D fast fourier transformation in spatial domain. [5 + 5]

Section B

Attempt any EIGHT questions.

[8 × 5 = 40]

4. Explain image degradation and restoration process. [5]
- 5/ Why do we need to remove noise? Discuss about median, max and min filter. [1 + 4]
- 6/ Define image segmentation. Explain the three basic types of grey level discontinuities detection. [1 + 4]
- 7/ How band reject filters are used to remove periodic noise? Explain. [5]
- 8/ Describe the algorithm for region splitting and merging in brief. [5]
- 9/ Explain how inter pixel redundancy can be identified and exploited. [5]
- 10/ Explain erosion with an example. [2 + 3]
- 11/ How signature is used in boundary representation? What does shape number mean? Explain. [2 + 3]
12. Define pattern and pattern class. How do you detect foreground and background of the image? Explain. [1 + 4]