CSC332-2082(N) ✡

Exam Roll No.....

Tribhuvan University
Institute of Science and Technology
2082
✡

Bachelor Level / Third Year /Fifth Semester/Science
Computer Science and Information Technology (CSC332)
(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 for as practicable.
The figures in the margin indicate full marks.

Section A

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

1. Distinguish between high frequency emphasis filter and Laplacian filter. Find the output of the following image using histogram equalization, where number of possible gray levels is 8. [3 + 7]

3	3	3	3	3
2	3	4	3	2
2	4	4	4	2
2	3	4	3	2
3	3	3	3	3

2. Define noise. Explain the models for image degradation and restoration process. [2 + 8]

3. What are the differences between spatial domain and frequency domain? Compute the 2D DFT of the following image. [3 + 7]

1	1	1	1
1	1	1	1
1	1	1	1
1	1	1	1

Section B

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

4. Discuss about chain code. Write the shape number of the object having chain code {0, 7, 5, 4, 3, 1}. [2.5 + 2.5]

5. How logic operation on binary images can be used for masking and feature detection? Explain. [5]

6. Define pattern and pattern class. How decision theoretic methods minimize the probability of misclassification? [2 + 3]

7. Given the following image, detect the edge using magnitude and direction of gradient, using Prewitt operator. [5]

0	30	60
5	32	62
10	38	64

8. What is image segmentation? How do you detect horizontal and vertical line? [2 + 3]

9. Describe the steps in digital image processing. [5]

10. How do you measure distance between pixels? Discuss about region oriented segmentation. [1 + 4]

11. Define clipping and contrast stretching. Compute Hadamard transform of the data sequence {1, 2, 0, 3}. [1 + 4]

12. Distinguish between forward and inverse transform. Define pixel coding, run length and bit plane. [2 + 3]