



EAST WEST UNIVERSITY
Department of Computer Science and Engineering
B.Sc. in Computer Science and Engineering Program
Class Test I, Fall 2023 Semester

Course: CSE 438 Digital Image Processing, Section-1
Instructor: Ahmed Wasif Reza, Ph.D., Professor, CSE Department
Full Marks: 10
Time: 60 Minutes

Notes: There are **THREE** questions, answer ALL of them. Marks for each question are mentioned at the right margin.

Q1. The following figure shows two image subsets, S_1 and S_2 . Determine whether S_1 and S_2 are

- a) 4-adjacent
- b) 8-adjacent
- c) m-adjacent

Let $V = \{0\}$. Also, determine and show the shortest path.

	S_1					S_2				
0	0	0	0	0	0	0	0	1	1	0
1	0	0	1	0	0	0	1	0	0	1
1	0	0	1	0	1	1	0	0	0	0
0	0	1	1	1	0	0	0	0	0	0
0	0	1	1	1	0	0	1	1	1	1

[Mark: 3]

Q2. You want to generate a mask of the tissue from a medical image. Following are two images where you have to

- i. Subtract, and
- ii. Multiply the images.

Explain how these operations will enhance the final image?

3	5	1	7
1	3	6	2
5	5	7	1
1	2	0	3

7	2	4	2
3	5	7	0
4	1	3	2
3	4	3	6

[Mark: 3]

Q3. Consider that two images (i) and (ii) are represented using statistical information having the number of pixels at each grey level as given below:

Image (i):

Grey levels (r_k)	0	1	2	3	4	5	6	7
Number of Pixels (n_k)	80	100	90	60	30	20	10	0

Image (ii):

Grey levels (r_k)	0	1	2	3	4	5	6	7
Number of Pixels (n_k)	0	0	0	80	100	60	70	100

Now modify the histogram of image (i) with respect to histogram (ii).

[Mark: 4]