

Candidate seat No: _____

Charotar University of Science and Technology [CHARUSAT]
Faculty of Technology and Engineering
Devang Patel Institute of Advance Technology and Research
CE379: IMAGE PROCESSING AND COMPUTER VISION(PE-II)
Unit Test - II

Semester: 6th Sem. B. Tech. (CE)

Maximum Marks: 30

Date: 11/04/2023 (Tuesday)

Time: 09:30 AM to 10:30 AM.

Instructions:

- (i) Attempt *all* the questions.
- (ii) Figures to the right indicate *full* marks.
- (iii) Make suitable assumptions and draw neat figures wherever if required.

Q-1 Answer the following questions.

[30]

- CO-1 U 1. What is meant by illumination and reflectance? How both of these are important for image capturing? 02
- CO-1 R 2. What is meant by object point and background point? 03
- CO-1 A 3. Draw the Fourier transformation for the given Composite Signal(Y). 05
Consider $X = [15^\circ - \pi \text{ to } 15^\circ \pi]$
 $Y = \sin(30^\circ X) + \sin(60^\circ X) + \sin(90^\circ X)$
- CO-1 R 4. Why we consider mask/filter as odd value? Explain with appropriate example 03
- CO-2 A 5. What is log transformation? What will be the output image matrix after applying 2times Log transformation on the given image IMG1? 04
Consider $C = 2$

68	54	62	50
57	27	63	46
36	28	40	12
45	60	52	64

IMG1

- CO-2 R,A 6. Discuss about region based image segmentation techniques. Compare threshold region based techniques with example. 04
- CO-2 A 7. What will be the out matrices by applying following filters on IMG1. 04
- Laplacian
 - Sobel
- ans?*

Handwritten calculations and matrices:

$$\begin{bmatrix} 0 & 1 & 0 \\ 1 & 4 & 1 \\ 0 & 1 & 0 \end{bmatrix}$$

$$\begin{bmatrix} 54 & 62 & 50 \\ 27 & 63 & 46 \\ 36 & 28 & 40 \end{bmatrix}$$

$$68 + 54 + 62 + 57 + 27 + 63 + 36 + 28 + 40$$

$$\begin{bmatrix} 0 & 1 & 0 \\ 1 & 4 & 1 \\ 0 & 1 & 0 \end{bmatrix}$$

$$\begin{bmatrix} 57 & 27 & 63 \\ 36 & 28 & 40 \\ 45 & 60 & 52 \end{bmatrix}$$

C

8.

Perform histogram equalization on below given image.

05

35	40	64	55
40	25	16	38
47	25	40	16
55	60	35	27

$$\begin{bmatrix} 6 & 1 & 0 \\ 1 & 4 & 1 \\ 0 & 1 & 0 \end{bmatrix} \begin{bmatrix} 27 & 63 & 46 \\ 28 & 40 & 12 \\ 60 & 52 & 64 \end{bmatrix}$$