Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India

(Autonomous College Affiliated to University of Mumbai)

Mid Semester Examination

September 2019

SYNOPTIC

Max. Marks: 20 | Duration: 1 Hour

Class: B.E. | Semester: VII

Course Code: IT71 | Branch: Information Technology

Name of the Course: Digital Image Processing | Date:16/09/2019

Time: 2:00PM to 3:00PM

Instruction:

(1) All questions are compulsory

(2) Draw neat diagrams

(3) Assume suitable data if necessary

Q No.		Max. Marks	CO	BL
Q.1	How Smoothing and Sharpening improves and enhance the quality of Images, Justify. Smoothing [4 Marks] Sharpening[2 Marks]	06	CO1	BL4
Q.2	Generate the Walsh Transform Matrix and compute Walsh transform of the given Image 2 1 2 1 1 2 3 2 2 3 4 3 1 2 3 2 Generation of Walsh Matrix [2 Marks] Correct Intermediate matrix [1 marks] Correct Walsh Transform of the Image [3 Marks] 34 -6 -6 2 -6 2 2 2 -6 2 2 2 2 2 2 2 **OR** Generate a Discrete Cosine Transform Matrix for N=4. Equation of DCT[2 Marks] 0.5 0.5 0.5 0.5 0.653 0.2705 -0.2705 -0.653 0.5 -0.5 -0.5 0.5 0.2705 -0.653 0.653 -0.2705	06	CO2	BL3

<table>
<tr>
<td>Q.3</td>
<td>Prove that High Pass: Original – Low Pass.
Original Image:
<table><tr><td>Z1</td><td>Z2</td><td>Z3</td></tr><tr><td>Z4</td><td>Z5</td><td>Z6</td></tr><tr><td>Z7</td><td>Z8</td><td>Z9</td></tr></table>
Low pass Filter
<table><tr><td>1/9</td><td>1/9</td><td>1/9</td></tr><tr><td>1/9</td><td>1/9</td><td>1/9</td></tr><tr><td>1/9</td><td>1/9</td><td>1/9</td></tr></table>
High pass Filter [1 Marks]
<table><tr><td>-1/9</td><td>-1/9</td><td>-1/9</td></tr><tr><td>-1/9</td><td>8/9</td><td>-1/9</td></tr><tr><td>-1/9</td><td>-1/9</td><td>-1/9</td></tr></table>
Original - Low pass [2 Marks]
High pass Mask [1 marks]
1/9 * <table><tr><td>-1</td><td>-1</td><td>-1</td></tr><tr><td>-1</td><td>8</td><td>-1</td></tr><tr><td>-1</td><td>-1</td><td>-1</td></tr></table></td>
<td>04</td>
<td>CO1</td>
<td>BL2</td>
</tr>
<tr>
<td>Q.4</td>
<td>Analyze the Impact of Opening and Closing operations on the Images. What is the use of Hit or Miss transform.
Impact of Opening operations [1 Marks]
Impact of Closing operations [1 Marks]
Use of Hit or Miss transform. [2 Marks]</td>
<td>04</td>
<td>CO1</td>
<td>BL4</td>
</tr>
</table>