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

August 2017

Max. Marks: 30 | Duration: 90 Min

Class: B.E. | Semester: VII

Course Code: ITC 7051 | Branch: Information Technology

Name of the Course: Image Processing

Instruction:

(1) All questions are compulsory

(2) Draw neat diagrams

(3) Assume suitable data if necessary

Q No.		Max. Marks	CO
Q.1	Given $$f(x,y) = \begin{bmatrix} 5 & 6 & 7 \\ 8 & 9 & 10 \end{bmatrix}$$ and $$h(x,y) = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$$ Compute Linear Convolution of Input Image f(x,y) with filter of h(x,y)	05	CO1
Q.2	Assuming that edge starts in the first row and ends in the last row. For the following gray level image, Sketch all the possible paths and determine the strongest edge. <table><tr><td>7</td><td>2</td><td>2</td></tr><tr><td>5</td><td>7</td><td>2</td></tr><tr><td>5</td><td>1</td><td>0</td></tr></table>	05	CO2
Q.3	Using 4-point DIF-FFT algorithm, evaluate 2D-DFT of the following image. <table><tr><td>0</td><td>1</td><td>2</td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td><td>2</td></tr><tr><td>2</td><td>1</td><td>0</td><td>1</td></tr><tr><td>1</td><td>2</td><td>1</td><td>0</td></tr></table> **OR** Let X(n) = {1,2,3,4}. Compute X(K) using DIT-FFT Method. Determine the suitable DFT property and compute FFT of X1(n) = {3,4,1,2,} using X(K).	10	CO3
Q.4 (a)	Prove that High Pass: Original – Low Pass	05	CO1
Q.4 (b)	Justify that Median filter is the best solution to remove salt and pepper noise. **OR** Justify that Extreme Contrast Stretching is Threholding	05	CO1