B.E. (IT) (Sem-VII) (CBSGS) (R-2012)

Paper / Subject Code: 42605 / Elective I : 1) Image Processing Date-26/11/19

(3 hours) **(80 marks)**

1. **Question I is compulsory.**
2. **Answer any 3 from remaining 5 Questions.**
3. **Figures to the right indicate full marks.**
4. **Assume suitable data wherever necessary.**

Q.1 Solve any **four**. **20**

a) Why Extreme contrast stretching is thresholding?

b) Explain what is Digital watermarking?

c) Explain seperability property of 2D-DFT?

d) Show that- High pass=original – Low pass.

e) Consider the image given below. Calculate the direction of the edge at the center point of the image:

50	60	70
5	50	80
7	9	50

Q.2 a) Explain the fundamental steps in digital image processing? **10**

b) Perform LZW encoding and decoding for the following sequence: ababababa. **10**

Q.3 a) Perform histogram equalization for the data given below and draw the histogram for input and output image. **10**

Grey level	0	1	2	3	4	5	6	7
Frequency	123	78	281	417	639	1054	816	688

b) What is morphology? Explain basic morphological functions in detail? **10**

Q4 a) Explain in detail region based segmentation. **10**

b) Explain the following frequency domain filters: **10**

a) Ideal low pass filter b) Butterworth high pass filter

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Q.5 a) Explain wavelet transform? **10**

b) Explain in detail image enhancement in spatial domain? **10**

Q.6 Write short note on: (**Any 4**) **20**

a) Hit-or-Miss transform

b) Applications of image processing

c) Filters in Spatial Domain

d) Compare lossy and lossless Compression Techniques

e) Content Based Image Retrieval (CBIR)

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