

**M. TECH.-II (ELECTRONICS V.L.S.I.) (CBCS – 2015  
COURSE) : WINTER - 2017  
SUBJECT : DIGITAL IMAGE & VIDEO PROCESSING**

Day : **Wednesday**  
Date : **29/11/2017**

Time **11.00 AM TO 02.00 PM**  
Max. Marks : 60

**W-2017-2810**

**N.B.**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of non-programmable calculator is allowed.
- 4) Assume suitable data if necessary.

**Q.1** What is image sensing and acquisition? Explain different methods of image acquisition. (10)

**OR**

Explain in detail MTF for human visual system. (10)

**Q.2** Apply DFT on following image sequence and verify whether it works  $z = \{a, 2, 8, 9\}$  (10)

**OR**

Explain image sharpening and unsharp masking filter. (10)

**Q.3** Explain the following with respect to compression: (10)  
i) Compression ratio ii) Coding redundancy iii) Interpixel redundancy  
iv) Psycho visual redundancy  
Explain any one measure to determine quality of decompressed image.

**OR**

The input data to be compressed are composed of symbols in alphabet with following probability find Huffman code for the same. (10)

Symbol	k	l	u	w	e	r	?
Probability	0.05	0.2	0.1	0.05	0.3	0.2	0.1

**Q.4** Explain the importance of thresholding and non maximal suppression in Canny edge detection. How the two concepts helps in the resulting edge image. (10)

**OR**

Explain detection of discontinuities in image segmentation using point detection, line detection and edge detection. (10)

**Q.5** Consider the following image A and structuring element B. Find the result of gray dilation and erosion. (10)

$$A = \begin{bmatrix} 7 & 8 & 2 & 4 \\ 6 & 4 & 3 & 3 \\ 7 & 3 & 6 & 6 \\ 4 & 4 & 2 & 3 \end{bmatrix} \quad B = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & 1 \\ 1 & 1 & 1 \end{bmatrix}$$

**OR**

Explain image restoration model. (10)

**Q.6** Explain interframe predictive coding. (10)

**OR**

Explain any one motion search algorithm?

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