H.T.No. | | | | | | | | | | |

Code No: EC1552 **GEC-R14**

IV B. Tech I Semester Regular Examinations, November 2017

DIGITAL IMAGE PROCESSING

(Electronics and Communication Engineering)

Time: 3 Hours **Max. Marks: 60**

Note: All Questions from **PART-A** are to be answered at one place.
Answer any **FOUR** questions from **PART-B.** All Questions carry equal Marks.

PART-A

6 × 2 = 12M

1. Define digital image.
2. a) Basic Hadamard matrix is given as _____.
   b) Walsh and Hadamard transforms are _____ in nature.
3. a) A contrast reversal transforms creates
   A) Color image B) Negative image
   C) Black and white image D) Gray image
   b) Give the formula for transfer function of a Butterworth low pass filter.
4. What are the three methods of estimating the degradation function?
5. a) Which segmentation algorithm groups pixels or sub region into larger regions based on predefined criteria?
   A) Region growing B) Region splitting and Merging
   C) K-means D) Fuzzy means
   b) Starting pixel in region growing process is called _____
   A) seed pixel B) base pixel C) original pixel D) image
6. Define compression ratio.

PART-B

4 × 12 = 48M

1. Consider an image segment shown below. Let V= {0, 1} compute D_e, D_4, D_8 and D_m distance between two pixels p and q whose pixel coordinates are (3,0) and(2,3) respectively. (12M)

	0	1	2	3
0	0	1	1	1
1	1	0	0	1
2	1	1	1	1
3	1	1	1	1

2. a) Write about the discrete sine transforms and its properties. (6M)
   b) Give the properties and applications of KL transforms. (6M)
3. a) How neighborhood processing contributes to image enhancement? (6M)
   b) Explain various high pass filters for image sharpening in frequency domain. (6M)
4. What is noise modeling? Explain various noise models. (12M)

5. a) Explain the use of motion in segmentation using spatial techniques. (6M)

   b) Describe watershed segmentation algorithm. (6M)

6. Draw the block diagram of general image compression system model and Explain in detail. (12M)

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