Registration no: | | | | | | | | | | |

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B.TECH
PECS5406

8th Semester Regular / Back Examination 2016-17
DIGITAL IMAGE PROCESSING
BRANCH(S): ECE, EEE, ELECTRICAL, ETC, FASHION, FAT
Time: 3 Hours
Max Marks: 70
Question code: Z266
Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1 **Answer the following questions:** **(2 x 10)**

a) Can two different images have the same histogram? Justify your answer.
b) What are the advantages of image sampling? Explain with example.
c) Define image subtraction.
d) What do you mean by Loosy Compression?
e) State Weber ratio.
f) Differentiate between spatial domain and frequency domain.
g) What are the advantages of Median filter?
h) Define Contrast Stretching.
i) Differentiate between Resolution and Aspect ratio.
j) Define compression ratio.

Q2 **a)** Explain the basic concept of Sampling and Quantization with neat sketch. **(5)**

b) Explain the need of Image transform. Explain about DCT and explain its properties. **(5)**

Q3 **a)** Calculate the Entropy and Construct the Huffman code for the given image data. **(5)**

Symbols	1	2	3	4	5	6
Probability	0.4	0.2	0.2	0.1	0.08	0.02

b) Write in brief about RGB,CMY, CMYK and HIS color models. **(5)**

Q4 What is noise? Classify different type of noise models with example and briefly discuss four filtering mechanism to overcome noises contaminated in an image at the time of acquisition **(10)**

Q5 **a)** Perform histogram Equalization for the 8 x 8 image shown in the table. **(5)**

Grey levels(r_k)	0	1	2	3	4	5	6	7
Number of Pixels(p_K)	8	10	10	2	12	16	4	2

b) What is the disadvantage in using low pass filter for image smoothing? How this is overcome? **(5)**

Q6 **a)** Describe constrained Least Squares Filtering for image restoration. **(5)**

b) Explain about different types of redundancy in the context of image processing. **(5)**

Q7 **a)** What do you understand by dilation and erosion operation in morphological operation? Explain in brief. **(5)**

b) How the disadvantage in binary bit plane coding is overcome by m-bit gray code. Explain. **(5)**

Q8 **Write short notes on any two:** **(5 X 2)**

a) Color Slicing

b) Wavelet transformation

c) Wiener Filter

d) High- boost Filter