Seat No._____

GANPAT UNIVERSITY

B. Tech. Semester VII (CBCS) REGULAR   Electronics & Communication Engineering Examination, Nov-Dec 2014

DIGITAL IMAGE PROCESSING (2EC 706)

Max. Time: 3 Hrs.]

[Max. Marks: 70

Instructions:
1. Attempt all questions.
2. Answers to the two sections must be written in separate answer books.
3. Figures to the right indicate full marks.
4. Assume suitable data, if necessary.

SECTION-I

Q-1	(A)	Specify the objective of image enhancement technique and explain the principle of contrast stretching using example.	6
	(B)	What do you mean by masking operation? Also explain the principle of Laplacian Technique using example.	6

OR

Q-1	(A)	Write a short note on image enhancement by point processing.	6
	(B)	Explain with the help of block diagram the Components of a general-purpose image processing system.	6
Q-2	(A)	Define D4-, D8- and Dm- distance between two points p and q with coordinates (x,y) and (s,t). For the image given below, compute the D4-, D8- and Dm-distances between pixels p and q for $V= \{1, 2\}$.	6

3	1	2	1	(q)
2	2	0	2	
1	2	1	1	
(p) 1	0	1	2	

	(B)	Define Weber ratio and matchband effect? Also Draw and explain the iso-prefrence curve with reference to different images.	6

OR

Q-2	(A)	6

Gray level (m)	0	1	2	3	4	5	6	7
Occurrence (nm)	790	1023	850	656	329	245	122	81

Apply the histogram equalization on this image. Also plot the equalized histogram of the output image.

	(B)	Explain the any one properties of Fourier transform and discuss the effect of highpass and lowpass filtering in frequency domain.	6
Q-3	(A)	Explain the Homomorphic filtering using block diagram in frequency domain.	6
	(B)	Explain with the help of experimental arrangement the image acquisition using the single sensor.	5

SECTION-II

Q-4	(A)	Define lossy and lossless image compression and explain the different types of redundancy.	6
	(B)	Explain wavelet transform with the help of necessary diagram.	6

OR

Q-4	(A)	Obtain the Huffman code for the word "**GOOD MORNING**". Also determine its average length, Entropy and efficiency.	6
	(B)	Draw and explain the block diagram of transform based image coding scheme.	6
Q-5	(A)	Write a short note on Split and Merge technique of image segmentation.	6
	(B)	Explain the concept of lossy and lossless predictive coding?	6

OR

Q-5 (A) Segment the given arbitrary shape shown below by the quadtree approach.   6

	(B)	Explain the shanon -fano coding using suitable example.	6
Q-6	(A)	Explain detection Line, point and edge using example.	6
	(B)	Given an image of size	5

x(m,n) =

2	4	6	8
10	11	16	15
9	3	1	7
12	14	13	5

Apply block truncation coding (BTC).

END OF PAPER