Seat No.:	Enrolment No
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## **GUJARAT TECHNOLOGICAL UNIVERSITY**

## **BE - SEMESTER-VII EXAMINATION – WINTER 2015**

	U	Code: 170307 Date:04/12/2015	
Ti	•	Name: Image Processing 0:30am to 1:00pm Total Marks: 70 ons:	
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Q.1	(a) (b)	Draw and explain the fundamental steps in digital image processing. Write a short note on gray level transformations.	07 07
Q.2	(a) (b)	Define Low Pass filter in frequency domain. Differentiate between Butterworth Low pass and Gaussian low pass filter.  Explain the importance of discrete cosine transform and its properties  OR	07 07
	<b>(b)</b>	Explain the usefulness of Image Sampling and Quantization in medical image processing.	07
Q.3	<ul><li>(a)</li><li>(b)</li></ul>	What is a histogram? Briefly explain the histogram equalization technique for image enhancement.  Explain various application of image processing in medicine.	07 07
Q.3	(a) (b)	OR  Draw and explain importance of JPEG Image Compression Standard.  Explain the Homomorphic filtering with neat diagram and also illustrate the importance in medical imaging.	07 07
Q.4	(a) (b)	Explain Erosion and Dilation with appropriate example.  Explain various methods for detecting edge in an image.  OR	07 07
Q.4	(a) (b)	Compute arithmetic coding for the following source symbols $a_1$ (0.5), $a_2$ (0.4), $a_3$ (0.1), $a_4$ (0.2) Write a short note on RGB color model.	07 07
Q.5	(a)	Explain the importance of thinning and skeleton morphological algorithm in medical imaging.	07
Q.5	<ul><li>(b)</li><li>(a)</li><li>(b)</li></ul>	Write a short note on Huffman Coding with appropriate example.  OR  Brief about different methods of sharpening of an image  Construct Huffman coding for the following source symbols with respective probabilities a1 (0.31), a2 (0.01), a3 (0.23), a4 (0.1), a5 (0.3), a6 (0.06), a7 (0.3)	07 07 07

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