GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VIII (NEW) EXAMINATION – WINTER 2018

Subject Code: 2182006   **Date: 15/11/2018**

Subject Name: Machine Vision

Time: 02:30 PM TO 05:00 PM   **Total Marks: 70**

Instructions:
1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

			MARKS
Q.1	**(a)**	Define histogram for a digital image.	**03**
	(b)	Explain the Digital image.	**04**
	(c)	Compare and contrast various methods of zooming and shrinking the digital image.	**07**
Q.2	**(a)**	Explain Sampling.	**03**
	(b)	Explain that the histogram equalization process is used for image enhancement.	**04**
	(c)	Briefly discuss the following logic operations based on morphology: NOT, AND, OR, XOR, NOT-AND	**07**

OR

			MARKS
	(c)	Show that the 2-D Discrete Fourier Transform can be computed by successive computations of two 1-D Discrete Fourier Transform one after the other, one for all rows and the other for all columns.	**07**
Q.3	**(a)**	Explain Sensor strip.	**03**
	(b)	Differentiate between erosion and dilation process.	**04**
	(c)	Explain the working of Laplacian filter in spatial domain. Also differentiate between the working of Laplacian filter and High Boost filter.	**07**

OR

			MARKS
Q.3	**(a)**	Explain Single sensor.	**03**
	(b)	Differentiate between high pass and low pass filters.	**04**
	(c)	Describe a complete digital image filtering process, in which illumination and reflectance components of the image are separated out for further image processing.	**07**
Q.4	**(a)**	What is Huffman coding?	**03**
	(b)	Explain the Gray level slicing.	**04**
	(c)	Schematically represent the following transformations and their inverses illustrating their needs for specific application on digital image. 1. Identity transformation 2. Logarithmic transformation 3. Power law transformation	**07**

OR

Q.4	(a)	What is LZW coding?	**03**
	(b)	Explain the Bit plane slicing.	**04**
	(c)	Evaluate the following statements.	**07**

1. Laplacian filtered image gives blurred image when histogram equalization is applied to it.
2. Iso-preference curves tend to become more vertical as the details in the image increases

Q.5	(a)	Explain Quantization.	**03**
	(b)	Describe the following properties of Fourier transform: Translation, Rotation.	**04**
	(c)	Explain with suitable example: "Instead of using histogram directly for image enhancement, one can use some statistical parameters also for image enhancement.	**07**

OR

Q.5	(a)	Explain the Euclidean distance measuring function between pixels of digital image.	**03**
	(b)	Describe the difference between opening and closing morphological operations which are performed on digital image.	**04**
	(c)	Describe Hit-or-Miss transform with the help of suitable example.	**07**

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