Enrollment No: _____ Exam Seat No:_____

C. U. SHAH UNIVERSITY

Summer Examination-2019

Subject Name : Image Processing

Subject Code : 4TE08IMP1 **Branch: B.Tech (EC)**

Semester: 8 **Date: 15/04/2019** **Time: 10:30 To 01:30** **Marks: 70**

Instructions:

(1) Use of Programmable calculator & any other electronic instrument is prohibited.
(2) Instructions written on main answer book are strictly to be obeyed.
(3) Draw neat diagrams and figures (if necessary) at right places.
(4) Assume suitable data if needed.

Q-1 **Attempt the following questions:** **(14)**

a)	An image is considered to be a function of $f(x, y)$. What f represents in it.	01
b)	Which is a colour attribute that describes a pure colour?	01
c)	A typical size comparable in quality to monochromatic TV image is of size.	01
d)	The number of grey values is integer powers of:	01
e)	What is the first and foremost step in Image Processing?	01
f)	What is the next step in image processing after compression?	01
g)	What is the tool used in tasks such as zooming, shrinking, rotating, etc.?	01
h)	What is the output of a smoothing, linear spatial filter?	01
i)	Give the 3×3 filter mask for smoothing spatial filter.	01
j)	The Image sharpening in frequency domain can be achieved by which method?	01
k)	How is image formation in the eye different from that in a photographic camera.	01
l)	What is subjective brightness?	01
m)	Write a mask for prewitt edge detector.	01
n)	What is the use of image segmentation?	01

Attempt any four questions from Q-2 to Q-8

Q-2 **Attempt all questions** **(14)**

a)	Explain fundamental steps for digital image processing.	**07**
b)	Explain connectivity and distance measures between image pixel.	**07**

Q-3 **Attempt all questions** **(14)**

a)	Explain log transformations and power-law transformations in detail.	**07**
b)	Explain histogram equalization process in detail.	**07**

Q-4 **Attempt all questions** **(14)**

a)	Explain arithmetic operations and logical operations for image enhancement.	**07**
b)	Explain smoothing frequency domain lowpass filters in details.	**07**

Q-5 **Attempt all questions** **(14)**

	a)	Discuss a model for image degradation / restoration process.	**07**
	b)	Explain order-statistics filters for image restoration.	**07**
Q-6		**Attempt all questions**	**(14)**
	a)	List out different color models and explain HIS model in detail.	**07**
	b)	Explain image compression models in details	**07**
Q-7		**Attempt all questions**	**(14)**
	a)	What is wavelet? Explain wavelet transforms in two dimensions.	**07**
	b)	Explain interpixel redundancy and psychovisual redundancy.	**07**
Q-8		**Attempt all questions**	**(14)**
	a)	Explain closing and opening operations on the digital image.	**07**
	b)	Discuss about edge detection operation on the digital image.	**07**