Hall Ticket No: | | | | | | | | | | |

Question Paper Code: A5651

VARDHAMAN COLLEGE OF ENGINEERING, HYDERABAD

An Autonomous institute affiliated to JNTUH

III B. Tech I Semester, Semester End Examinations, December - 2021

(Regulations: VCE-R19)

IMAGE PROCESSING

(Information Technology)

Date: 20 December, 2021 FN **Time: 3 hours** **Max Marks: 100**

Answer All questions

1.	a)	What are the different types distance measures?	***3M***
	b)	Which function in OpenCV performs read an image, displays an image in a window, writes an image into the file directory?	***3M***
	c)	What is the objective of Discrete Cosine Transform (DCT)?	***3M***
	d)	Difference Between FFT and DFT.	***3M***
	e)	What is image compression? Why it is needed?	***3M***
	f)	Explain the effect of noise on edge detection.	***3M***
	g)	What is meant by image restoration?	***3M***
	h)	What is meant by moire patterns? Explain	***3M***
	i)	What is Intensity Slicing in pseudocolor image processing?	***3M***
	j)	Differentiate between lossy and lossless compression techniques.	***3M***
2.	a)	Explain about image sampling and quantization process.	***7M***
	b)	Briefly discuss relationships and distance measures between pixels in a digital image.	***7M***
		(OR)	
	c)	What are the various fundamental steps in image processing? Explain.	***7M***
	d)	Explain the following terms: i. connectivity ii regions iii boundaries	***7M***
3.	a)	Compute Walsh transform for following N value. N=8.	***7M***
	b)	How Fourier transforms are useful in image processing and explain the properties of Fourier transform.	***7M***
		(OR)	
	c)	Explain Fast Fourier Transform (FFT) in detail.	***7M***
	d)	Find the Haar transformation matrix for N=8.	***7M***
4.	a)	Explain the process of Histogram Equalization by taking an example.	***7M***
	b)	Illustrate different steps in the image averaging process.	***7M***
		(OR)	
	c)	Explain the process of Order-Statistics Filters.	***7M***
	d)	Briefly discuss the roles of Gradient and the Laplacian operators in image enhancement.	***7M***
5.	a)	Write a short notes on the following filters: i. Band reject and Band pass filters ii. High pass filters	***7M***
	b)	Explain the concept of Inverse Filtering and also mention the limitations.	***7M***
		(OR)	
	c)	Explain how periodic noise can be reduced using frequency domain filtering.	***7M***
	d)	With necessary equations, explain about Homomorphic filtering.	***7M***
6.	a)	Explain Schematic of the RGB color cube.	***7M***
	b)	Explain the procedure of converting colors from RGB to HIS.	***7M***
		(OR)	
	c)	Explain different components in pseudocolor image processing.	***7M***
	d)	Briefly discuss Segmentation in HSI Color Space.	***7M***