Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth Semester B.Tech Degree Examination June 2022 (2019 Scheme)

Course Code: MRT304

Course Name: DIGITAL IMAGE PROCESSING & MACHINE VISION

Max. Marks: 100 **Duration: 3 Hours**

PART A

Answer all questions, each carries 3 marks. Marks

1	Define neighbors of a pixel	(3)
2	What are the types of basic gray level transformation functions?	(3)
3	Mention the basic approaches of image enhancement	(3)
4	State the concept of histogram equalization.	(3)
5	Differentiate between lossy and lossless compression	(3)
6	What is meant by digital image water marking	(3)
7	Define representation.What are the different types of representations	(3)
8	Give a brief description about image segmentation	(3)
9	Draw a block diagram of a simple machine vision system.	(3)
10	Mention any 3 applications of machine vision systems	(3)

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

11	a)	With procedural steps, explain the construction of Haar Matrix of order 4.	(8)
	b)	Explain the following operations i) Contrast stretching ii) Bit-plane slicing	(6)

OR

12	a)	Define histogram of an image. Obtain histogram equalization of the following image 6 6 7 7 6 5 2 2 3 4 3 3 4 4 5 5 7 3 6 2 7 6 5 5 4	(10)
	b)	List out any 2 properties of 2D Fourier Transform.	(4)

Module II

13	a)	Give a brief description about pseudo inverse filtering	(4)
	b)	Estimate wiener filtering approach for image restoration	(10)
		OR	
14	a)	Explain the concept of blind image restoration	(4)
	b)	With necessary equations and graph explain the noise models	(10)

Module III

15	a)	State the coding procedure used in Huffman coding with suitable example	(9)
	b)	Illustrate LZW coding with suitable example	(5)
		OR	
16	a)	Illustrate JPEG image compression with neat sketches	(9)
	b)	Explain redundancies associated with image compression	(5)

Module IV

17	a)	Discuss the principle of global thresholding. Explain the role of illumination.	(8)
	b)	Elucidate the concept region based segmentation.	(6)
		OR	
18	a)	With suitable sketches describe chain codes for boundary representation.	(8)
	b)	Evaluate on Fourier descriptors.	(6)

Module V

19	a)	With a neat sketch , justify that CCD has become a major technology for digital imaging	(7)
	b)	Explain the principle of image acquisition and digitization	(7)
		OR	
20	a)	List out the various steps in feature extraction is carried out in image processing	(8)
	b)	Define machine vision and also write a detailed description about low level and high level vision	(6)

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