

Reg.No.:



VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN

[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]

Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 7021

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – MAY / JUNE 2024

Sixth Semester

Electronics and Communication Engineering

U19ECV65 - COMPUTER VISION

(Regulation 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions.

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	What is the time and frequency domain processing of an image?	2	K2	CO1
2.	Consider this information: 4-bit grayscale image. What do you understand by this?	2	K2	CO1
3.	What is affine transformation?	2	K1	CO2
4.	What is convolution?	2	K1	CO2
5.	Write short notes on canny edge detection.	2	K2	CO3
6.	Highlight the significance of Gabor Filters.	2	K2	CO3
7.	What is Graph cut?	2	K1	CO4
8.	Mention the basic principle of texture segmentation.	2	K2	CO4
9.	Differentiate between supervised and unsupervised learning.	2	K2	CO5
10.	List the different types of discriminant function.	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO									
11.	a) Discuss in detail about at least two thresholding techniques used in image processing.	13	K2	CO1									
	(OR)												
	b) What is the difference between high-pass and low-pass filtering? What information can be extracted via filtering of an image?	13	K2	CO1									
12.	a) What is histogram equalization? What is its benefit? Apply histogram equalization on the following 8-bit gray image segment:	13	K3	CO2									
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	(OR)												
	b) Explain the concept of image formation with a neat diagram. What are the factors that affect image formation?	13	K2	CO2									
13.	a) How Hough Transform can be used in a computer vision domain to detect shapes like lines and circles in an image? Explain in detail.	13	K2	CO3									
	(OR)												
	b) What is the difference between DWT (Discrete Wavelet transform) and DFT (Discrete Fourier transform)? How they are useful for computer vision?	13	K2	CO3									
14.	a) What is the basic purpose of image segmentation? Explain the working of the region-growing image segmentation technique.	13	K2	CO4									
	(OR)												
	b) What is the use of object detection? Explain the basic components of object detection and the respective working of those components.	13	K2	CO4									
15.	a) Apply the K-means clustering on the data: [(2, 8), (9, 4), (9, 3), (1, 7), (8, 1), (9, 2)] for two epochs assuming initial centroids: (1, 9) & (9, 1).	13	K3	CO5									
	(OR)												
	b) Explain the basic mathematical model of ANN. How ANN can be used for classification? Explain in detail.	13	K2	CO5									

PART – C

(1 x 15 = 15 Marks)

Q.No.	Questions	Marks	KL	CO
16. a)	With a suitable example explain how PCA is being used for dimensionality reduction.	15	K2	CO5
(OR)				
b)	Highlight the significance of feature extraction and explain the following two feature extraction methods. HOG: Histogram of Oriented Gradients SIFT: Scale Invariant Feature	15	K2	CO3
