C Reg. No. :

Question Paper Code: 99409

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2024

Elective

Electronics and Communication Engineering

19UEC909- IMAGE ANALYSIS AND VIDEO PROCESSING

(Regulations 2019)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. Curvelets are ----------- technique for multi-scale object representation.   CO1- U

    (a) adaptive   (b) non adaptive   (c) dynamic   (d) Varying

2. Which is a colour attribute that describes a pure colour?   CO1- U

    (a) Saturation   (b) Hue   (c) Brightness   (d) Intensity

3. Spam Classification is an example for _____   CO1 -U

   (a) Naive Bayes   (b) Probabilistic Condition

   (c) Random forest   (d) All the above

4. Digital video standards is -----   CO1- U

    (a) NTSC   (b) RGB   (c) YMCK   (d) JPEG

5. Hypothesis testing with Fixed/Adaptive thresholding Motion Estimation_____   CO1- U

    (a) t - test   (b) f – test   (c) chi - square test   (d) z - test

PART – B (5 x 3= 15Marks)

6. Specify the Properties of wavelet transform   CO1- U

7. How the derivatives are obtained in edge detection during formulation?   CO1- U

8. How to choose the optimal value of K in the KNN Algorithm?   CO1 -U

9. Illustrate the purpose of NVR in CCTV.   CO1- U

10. State block matching algorithm based on its estimation strategy   CO5- U

11. (a) Describe the Fourier transform and discrete Fourier transform and discuss the properties of Fourier transform.   CO1- U   (16)

Or

(b) Explain the working of Weiner filter in image restoration.   CO1 -U   (16)

12. (a) Describe watershed segmentation algorithm and compare with region based approaches.   CO1 -U   (16)

Or

(b) Describe the region splitting and merging algorithm.   CO1 -U   (16)

13. (a) Consider the given dataset, Apply Naïve Baye's algorithm and predict that if a fruit has the following properties then which type of fruit it is.   CO2 -App   (16)

Fruit = { Yellow, Sweet, Long}

Fruit	Yellow	Sweet	Long	Total
Mango	350	450	0	650
Banana	400	300	350	400
Others	50	100	50	150
Total	800	850	400	1200

Or

(b) Given the following training instances in below table, Each having two attributes (x and y). Compute the class label for test instance $t_l = (3,7)$ using three nearest neighbors (k = 3)   CO2 -App   (16)

Training instance(t_1)	x	y	Output (k)
A	7	7	0
B	7	4	0
C	3	4	1
D	1	4	1

14. (a) Analyze different type of video cameras related to NVR and DVR systems   CO4- Ana   (16)

Or

(b) Analyze the digital video standards by CCD sensors and CMOS sensors.   CO4- Ana   (16)

99409

15. (a) Explain the motion detection algorithms for Hypothesis Testing CO1- U (16)
with Fixed Threshold and Adaptive Threshold.

Or

(b) Discuss in detail about different algorithms used for block CO1 -U (16)
matching approaches.

99409