C **Reg. No. :**

Question Paper Code: 99409

B.E. / B.Tech. DEGREE EXAMINATION, NOV 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. In wiener filtering it is assumed that noise and image are   CO1- U

   (a) Different   (b) Homogeneous   (c) correlated   (d) Uncorrelated

2. _____ partitions the objects into different groups.   CO1 U

   (a) Mapping   (b) Clustering   (c) Classification   (d) Prediction

3. Which of the following evaluation metrics cannot be applied in case of   CO1- U
   logistic regression output to compare with target?

   (a) AUC-ROC   (b) Accuracy   (c) Logloss   (d) Mean-Squared-Error

4. What is the range of component values often stored as integer numbers   CO1- U
   and represented as either decimal or hexadecimal numbers in RGB
   video signal?

   (a) 0 to 255   (b) 10 to 500   (c) 1 to 255   (d) 255 to 550

5. Which frames are encoded using a combination of motion estimation   CO1- U
   and motion compensation?

   (a) I frame   (b) P frame   (c) B frame   (d) D frame

PART – B (5 x 3= 15 Marks)

6. Specify the Properties of wavelet transform   CO1- U

7. List the hardware oriented colour models.   CO1 -U

8. Mention the applications of random forests classifiers?   CO1 -U

9. Interpret the difference between Interlaced scanning and Progressive scanning?   CO1- U

10. Relate pixel classification in image analysis. CO1- U

<div align="center">PART – C (5 x 16= 80 Marks)</div>

11. (a) Derive the mathematical expression for any 2 transforms and also write its importance   CO1 -U   (16)

<div align="center">Or</div>

(b) Derive transfer function of Wiener restoration filter. Also explain it's practical implementation methods   CO1- U   (16)

12. (a) Compose about the various grey level transformations with examples and plot the graph of the transformation functions   CO1 -U   (16)

<div align="center">Or</div>

(b) Describe histogram equalization. Obtain Histogram equalization for the following image segment of size 5 x 5? Write the inference on image segment before and after equalization   CO1 -U   (16)

13. (a) Define K nearest neighbor classifier to predict the diabetic patient with the given features BMI, Age. If the training examples are,(Assume K = 3)   CO1 -U   (16)

BMI	Age	Sugar
33.6	50	1
26.6	30	O
23.4	40	O
43.1	67	O
35.3	23	1
35.9	67	1
36.7	45	1
25.7	46	O
23.3	29	O
31	56	1

<div align="center">Or</div>

(b) Explain the procedure for getting KNN classifiers for given dataset?   CO1- U   (16)

14. (a) What are all the different video standards in digital video? How that methods apply in video acquisition.   CO5 -AP   (16)

<div align="center">Or</div>

(b) Apply the basic concepts in sampling stuctures of Analog video and Digital video.   CO5 -AP   (16)

99409

15. (a) Explain pixel based method of motion detection technique in video. CO1 -U (16)

Or

(b) Describe Block based transform coding with suitable example. CO1- U (16)

99409