 PG/IS/COS/103/23(M1 & M2)

M.Sc. 1st Semester Examination, 2023

COMPUTER SCIENCE

PAPER – COS-103(M1 & M2)

Full Marks : 50

Time : 2 hours

Answer **all** questions

The figures in the right hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

PAPER – COS-103 (M1)

(*Pattern Recognition*)

[Marks : 20]

GROUP – A

Answer any **two** questions : 2×2

1. Define eager learning.

2. Write atleast four applications of pattern recognition.

3. What do you mean by feature extraction ?

4. What is supervised learning ?

GROUP – B

Answer any **two** questions : 4×2

5. Differentiate between supervised and unsupervised learning.

6. Write the uses of SVM.

7. Define classification. Differentiate between good features and bad features. $1 + 3$

8. What is a good cluster ? Write its properties. $2 + 2$

GROUP – C

Answer any **one** question : 8×1

9. Describe the KNN method for classification with the help of an example.

10. Write short notes on following (any *two*) : 2×4

(*i*) SVM

(*ii*) ANN

(*iii*) Clustering

(*iv*) Pattern Recognition System.

PAPER – COS-103 (M2)(Th)

(*Image Processing*)

[Marks : 20]

GROUP – A

Answer any **two** questions : 2×2

1. Compare Brightness and Contrast of Digital Image.

2. What are different edge detectors ? Give their names.

3. Write expression for Log and Gamma transformations.

4. Identify the different type of derivative filters in DIP.

GROUP–B

Answer any **two** questions : 4×2

5. What do you mean by thresholding ? Why is required ?

6. Explain Image Sampling and Quantization.

7. Explain the components of an image processing system, with the help of a suitable diagram.

8. Explain any one spatial filtering for smoothing and sharpening of any image.

GROUP – C

Answer any **one** question : 8×1

9. Describe histogram equalization. Obtain histogram equalization for the following image segment of size (5×5). Write the interference on the image segment before and after equalization :

20	20	20	18	16
15	15	16	18	15
15	15	19	15	17
16	17	19	18	16
20	18	17	20	15

(5×5) matrix

10. Define and explain the effect of the following morphological processing :

(*i*) Dilation

(*ii*) Erosion

(*iii*) Opening

(*iv*) Closing.

[Internal Assessment — 10 Marks]
