PG/IS/COS/103/24

M.Sc. 1st Semester Examination, 2024

COMPUTER SCIENCE

(*Pattern Recognition & Image Processing*)

PAPER—COS-103

Full Marks : 50

Time : 2 hours

The figures in the right hand margin indicate marks

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

GROUP – A

Answer any **four** questions : 2×4

1. What is supervised learning ?

2. Describe the purpose of feature extraction.

3. Define Classification.

4. What is overfitting ?

5. Compare smoothing and sharpening filter of Digital Image.

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

7. Write expression for Log and Gamma transformations.

8. Write the different type of transformation in frequency domain in DIP.

GROUP – B

Answer any **four** questions : 4 × 4

9. What do you mean by segmentations ? Why is required ?

10. What do you mean by Image enhancement ? Explain any two.

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

12. What is clustering ? Discuss its applications.

13. Explain the k-means clustering method with an example.

14. Differentiate between lazy learning and eager learning with examples.

GROUP – C

Answer any **two** questions : 8×2

15. Describe the KNN algorithm for classification, providing an example.

16. Compose about the various grey level transformations with examples and plot and graph of the transformation functions.

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

(*a*) Dilation

(*b*) Erosion

(*c*) Opening

(*d*) Closing.

18. Write short notes on any *two* :

(*i*) Curse of dimensionality

(*ii*) Artificial Neural networks

(*iii*) Good features vs. bad features

(*iv*) Pattern recognition system.
