M.Sc. 3rd Semester Examination, 2022

COMPUTER SCIENCE

(*Computer Graphics/Image Processing*)

PAPER – COS-302(M1 & M2)

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

PAPER—COS-302(M1)

(*Computer Graphics*)

[*Marks* : 25]

GROUP – A

Answer any two questions : 2×2

1. What is persistence of phosphor ?

2. Why DDA is known as Incremental algorithm ?

3. Define Resolution and Aspect ratio.

4. What do you mean by the terms Horizontal retracing and Vertical retracing ?

GROUP – B

Answer any **two** questions : 4×2

5. Distinguish between Raster Scan display system and Random Scan display system.

6. A triangle is located at P(2, 2), Q(4, 2), R(4, 4). Work out the transformation matrix which would rotate the triangle by 90 degrees about origin and also find the coordinates of the rotated triangle.

7. With the help of a diagram explain the working principle of CRT.

8. What is Projection ? Why we need Projection ?

GROUP – C

Answer any **one** question : 8×1

9. Write the algorithm of Bresenham's Line drawing along with the justification that "Bresenham's line drawing algorithm uses integer arithmetic".

10. Explain all the standards of 2D reflection.

2+2

Internal Assessment – 05 Marks]

PAPER–COS-302(M2)

(*Image Processing*)

[*Marks* : 25]

GROUP – A

Answer any **two** questions : 2×2

11. Classify order statistic filter.

12. Compare Brightness and Contrast.

13. Define Histogram.

14. Define Dilation and Erosion.

GROUP – B

Answer any **two** questions : 4×2

15. State the difference between regions and boundaries. Differentiate between zooming and shrinking of Digital Image.

16. Describe the following transformations to enhance the image (*i*) Log Transformation (*ii*) Power Law Transformation. $2 + 2$

17. What do you mean by Sharping ? How can it be achieved ? $2 + 2$

18. Explain Neighbor of pixel, adjacency, connectivity, distance. 4×1

GROUP – C

Answer any **one** question : 8×1

19. Obtain Histogram and Histogram equalization for a given image (4 × 4)– 4 bit per pixel is given by

10	12	8	9
10	12	12	14
12	13	10	9
14	12	10	12

8

20. Define and explain the effect of the following morphological processing. 2 × 4

(*a*) Butterworth Low Pass Filter

(*b*) Discrete Fourier Transform

(*c*) Opening

(*d*) Closing.

[*Internal Assessment* – 05 Marks]