2020

COMPUTER SCIENCE — GENERAL

Paper : DSE-A-3

(Computer Graphics)

Full Marks : 50

The figures in the margin indicate full marks.

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

Day 3

Answer ***question no.*** **1** and ***any four*** questions from the rest.

1. Answer ***any five*** questions : 2×5

(a) What do you mean by shearing?

(b) Define Aspect Ratio.

(c) What do you mean by Raster scan display?

(d) What is view-port?

(e) State the use of morphing.

(f) What do you mean by refresh rate of a display?

(g) Write the 3-dimensional translation matrix.

(h) Define world coordinate.

2. (a) Derive and discuss Bresenham's algorithm for line drawing. Explain why this algorithm is preferred over Digital Differential Analyzer (DDA) for line drawing.

(b) What are meant by interior and exterior clipping? (5+3)+2

3. (a) Explain Cohen–Sutherland line clipping algorithm.

(b) Prove that, multiplication of Transformation matrices for two successive rotations is commutative. 5+5

4. (a) What is projection? Differentiate between parallel and perspective projections.

(b) What do you understand by Homogeneous coordinates? (2+5)+3

5. (a) Explain DDA algorithm.

(b) Briefly explain the steps required for designing an animation sequence. 5+5

Please Turn Over

6. (a) Discuss Sutherland-Hudgeman polygon clipping algorithm.

(b) Write short notes on the following transformation operations : Translation, Rotation, Scaling. 4+6

7. (a) 'The eight-way symmetry of a circle can be used to devise an efficient circle drawing algorithm.' — Justify the statement with a suitable algorithm.

(b) 'Rotation and Translation operations are not commutative.'— Justify. 5+5

8. (a) How can the scaling transformation of an object be done?

(b) Define window port.

(c) Discuss Reflection operations. 5+2+3

———————