

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
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