

Code: 9A03806

B.Tech IV Year II Semester (R09) Advanced Supplementary Examinations, July 2013

**GEOMETRIC MODELING**

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

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- 1 (a) Describe raster scan displays with a neat sketch. Explain the working principle, applications and limitations.  
(b) What are work station requirements and how these are different from desktop systems?
- 2 (a) Explain line and circle generation algorithms.  
(b) Explain polygon filling algorithms.
- 3 (a) Differentiate between:  
(i) Shearing and reflection and (ii) Concatenation and homogeneous representation.  
(b) A triangle A (0, 0), B (5, 2) and C (3, 5) is scaled about 'B' by (5, 5) units. Then find the new coordinates of the triangle ABC.
- 4 (a) What is viewing function? Explain the transformations from window to viewport.  
(b) Explain Sutherland-Hodgeman polygon clipping algorithm.
- 5 (a) What are the properties of spline? Explain how Bezier curve and surfaces are composed.  
(b) Describe continuity in Bezier and B spline curves.
- 6 The pyramid defined by the coordinates A (0, 0, 0), B (1, 0, 0) C (0, 1, 0) and D (0, 0, 1) is rotated  $45^\circ$  about the line L that has the direction  $V = J + K$  and passing through point C (0, 1, 0), see figure 1. Find the coordinates of rotated figure.

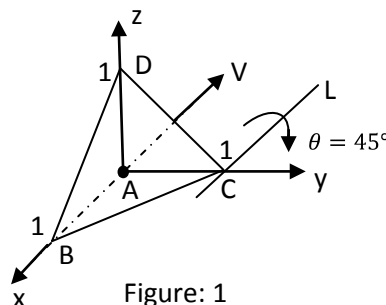


Figure: 1

- 7 Describe visible surface detection methods and their applications.
- 8 Describe in detail the computer animation and motion specifications with neat sketches.

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