

**SUBJECT: COMPUTER GRAPHICS AND VISUALIZATION**

Day: Saturday  
Date: 25/05/2019

**S-2019-2603**

Time: 10.00 AM TO 01.00 PM  
Max. Marks: 60

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**N.B:**

- 1) All questions are **COMPULSORY**.
  - 2) Figures to the right indicate **FULL** marks.
  - 3) Assume suitable data if necessary.
  - 4) Use of non programmable **CALCULATOR** is allowed.
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**Q.1** What are different character generation methods? Write C code to generate character 'A'. (10)

**OR**

- a) How to generate thick line by using DDA line generation algorithm? (05)
- b) What is the role of display processor and display file structure in computer graphics? (05)

**Q.2** Explain Cohen Southerland out code method for line clipping algorithm with example. (10)

**OR**

What is Window and Viewport? How to perform Window to Viewport transformation? (10)

**Q.3** Consider triangle ABC with A(2,5),B(7,10),C(10,2),apply following transformations on it, (10)

1. Scale two units in x direction and 2 units in y direction.
2. Rotate by 45 degree with anticlockwise direction.

**OR**

How to perform rotation about an arbitrary axis in 3-D? Explain with example. (10)

**Q.4** Explain following terms, (10)

- i) Diffuse Illumination
- ii) Specular Reflection
- iii) Point Source Illumination
- iv) Ray Tracing.

**OR**

Explain the following with the help of example, (10)

- i) Backface algorithm
- ii) Painter's algorithm

**Q.5** Discuss segment table structure and explain different data structures to implement segment table. (10)

**OR**

Define following terms, (10)

- i) Morphing
- ii) Virtual Reality
- iii) Rendering

**Q.6** What are Fractals? Explain how fractal line algorithm can be used for generating fractal surfaces. (10)

**OR**

How to generate Bezier curve? Compare Bezier curve with B-spline curve. (10)

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