**C 1168** **(Pages : 2)** Name.....

Reg. No.....

**SIXTH SEMESTER B.TECH. (ENGINEERING) [09 SCHEME] DEGREE EXAMINATION, APRIL 2016**

CS/PTCS 09 605—COMPUTER GRAPHICS

Time : Three Hours Maximum : 70 Marks

**Part A**

Short answer questions (one/two sentences)

1. What are the primary components of an electron gun in a CRT ?
2. Digitize a line from (10, 12) to (15, 15) on a raster screen using Bresenhams straight line algorithm.
3. Differentiate parallel projection from perspective projection.
4. Give the single-point perspective projection transformation matrix when projectors are placed on the z-axis.
5. How objects are modelled using constructive solid geometry technique ?

(5 × 2 = 10 marks)

**Part B**

*Answer any* **four** *questions.*

Analytical/Problem solving questions.

6. Write down and explain the midpoint circle drawing algorithm. Assume 10 cm as the radius and co-ordinate origin as the centre of the circle.
7. Determine the blending function for uniform periodic Bspline curve for $n = 4$, $d = 4$.
8. Calculate the pixel location approximating the first octant of a circle having centre at (4, 5) and radius 4 units using Bresenhams algorithm.
9. Discuss the Ray tracing process with an example.
10. Explain the method for adding surface texture.
11. Explain the general perspective-projection transformation.

(4 × 5 = 20 marks)

**Turn over**

## Part C

*Answer* **all** *questions.*

Descriptive/Analytical/Problem solving questions.

12. (a) Explain the basic concept of Midpoint ellipse drawing algorithm. Derive the decision parameter for the algorithm and write down the algorithm steps.

(10 marks)

*Or*

(b) Explain two dimensional Translation and Scaling with an example. (10 marks)

13. (a) Otain a transformation matrix for rotating an object about a specified pivot point.

(10 marks)

*Or*

(b) Explain in datail about generation of different charts. (10 marks)

14. (a) Explain how refraction of light in a transparent object changes the view of the three dimensional object.

(10 marks)

*Or*

(b) Discuss about the methods for drawing 3D objects and scenes. (10 marks)

15. (a) (i) Describe the creation of images by iterated functions. (5 marks)

(ii) Explain the method for adding surface texture. (5 marks)

*Or*

(b) Discuss on Area subdivision method of hidden surface identification algorithm.

(10 marks)

**[4 × 10 = 40 marks]**