Code No: R1621056

R16

SET - 1

II B. Tech I Semester Regular Examinations, October/November - 2017
COMPUTER GRAPHICS
(Computer Science & Engineering)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer**ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1. a) Differentiate window and viewport.   (3M)

    b) State the properties of B spline approximations.   (3M)

    c) What is animation?   (2M)

    d) What do you mean by shading of objects?   (2M)

    e) Define fractals.   (2M)

    f) List out the Boolean operations on Objects.   (2M)

PART -B

2. a) Explain the working of the Sutherland - Hodgeman algorithm for polygonal   (7M)
        clipping with the help of suitable example.
    b) Apply the Bresenham's algorithm to turn up pixels along the line segment   (7M)
        determined by points (5,7) and (12,11)

3. a) What are the advantages of 3 D graphics? Describe briefly about painter's (7M)
        algorithm for hidden surface removal.
    b) Explain the process of generating curves and surfaces using Hermite method. (7M)

4. a) Discuss about basic OPENGL operations.   (7M)

    b) Write notes on RGB color models.   (7M)

5. a) Explain the graphical languages followed to achieve animation.   (7M)

    b) What is the mechanism followed for tracking live action in animated scenes? (7M)
        Explain.

6.   Write about random fractals in detail.   (14M)

7.   Write notes on the following: (14M)
        a) Reflections and Transparency
        b) Ray Tracing

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PART –A

1. a) What is the difference between Bezier curve and B-spline curve? (3M)

   b) Define text clipping. (2M)

   c) State the difference between CMY and HSV color models (3M)

   d) How do you add texture to faces? (2M)

   e) What is Julia Sets? (2M)

   f) What is Surface texture? (2M)

PART -B

2. Explain the following terms with reference to 2-D displays: (14M)
   　　a) Viewing transformation
   　　b) Window and viewport

3. a) Explain basic 3D transformations? (7M)

   b) Explain an algorithm for the generation of B-spline. (7M)

4. a) Discuss the characteristics of key-frame animation. (7M)

   b) Write notes on HSV color models (7M)

5. a) How do you create shaded objects and draw shadows? Explain. (7M)

   b) Differentiate Flat and Smooth shading. (7M)

6. a) Describe the Creation of images by iterated functions. (7M)

   b) Describe Mandelbrot sets. (7M)

7. a) Explain the method for adding surface texture. (7M)

   b) Write short notes on applying Boolean operations on modelled objects to create new objects. (7M)

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PART –A

1.	a)	List 2D graphics primitives.	(3M)
	b)	Define quadratic surfaces.	(2M)
	c)	Define key frames.	(2M)
	d)	Which shading method is faster and easier to calculate? Why.	(3M)
	e)	List down the properties of piano curves.	(2M)
	f)	What is the use of fractals in graphics applications?	(2M)

PART -B

2.	a)	Explain the Cohen-Sutherland algorithm for finding the category of a line segment. Show clearly how each category is handled by the algorithm.	(7M)
	b)	Some of the line-generation algorithms will not draw 45° lines properly. Why? Can you suggest modifications that will correct this flow?	(7M)
3.	a)	Explain about parallel projection and perspective projection.	(7M)
	b)	Explain the process of generating curves and surfaces using Bezier method.	(7M)
4.	a)	Compare and contrast RGB and CMY color models.	(7M)
	b)	Explain how 3D scenes are drawn.	(7M)
5.		Write down and explain the details to build a camera in a program.	(14M)
6.		Write notes on Peano curves.	(14M)
7.	a)	Explain in detail ray tracing method.	(7M)
	b)	Explain how refraction of light in a transparent object changes the view of the 3D object.	(7M)

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PART –A

1. a) How will you clip a point? (2M)
   b) What are the advantages of B spline over Bezier curve? (3M)
   c) What ate key frame systems? (2M)
   d) What is Gauraud shading. (3M)
   e) List down the different types of fractals. (2M)
   f) What are the types of reflection of incident light? (2M)

PART -B

2. a) What are the 2D transformations? Explain them with necessary illustrations. (7M)
   b) Plot the line (-4 -4) to (8, 4) using DDA. (7M)

3. a) Explain the hidden surfaces and line removal methods with their relative merits. (7M)
   b) Give an algorithm for the generation of Bezier curves? (7M)

4. a) Explain in detail about the methods of controlling animation. (7M)
   b) Explain in detail YIQ color model. (7M)

5. Explain the following: (14M)
   a) Adding texture to faces.
   b) Adding shadows of objects

6. a) Describe the Creation of images by iterated functions. (7M)
   b) Write about random fractals in detail. (7M)

7. Write short notes on (14M)
   a) Ray tracing
   b) Boolean operations on Objects

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