Registration No : | | | | | | | | | | |

Total Number of Pages : 02 **B.Tech**
PCS5I102

5th Semester Regular/Back Examination 2018-19
COMPUTER GRAPHICS
BRANCH : CSE
Time : 3 Hours
Max Marks : 100
Q.CODE : E299

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.
The figures in the right hand margin indicate marks.

Part- I

Q1 Short Answer Type Questions (Answer All-10) **(2 x 10)**

a) What is fractal dimension and how is it calculated?
b) Prove that 2D rotation and scaling are commutative if scaling factor Sx = Sy
c) Differentiate between raster scan and random scan systems
d) Define persistence. What type of persistence systems are held in animations?
e) Explain shearing in 2D with an example.
f) Differentiate between interpolating and approximating curves with an example.
g) What do you mean by Phong Shading? Explain how a polygon surface is rendered using Phong shading.
h) Differentiate between parallel and prospective projections with an example.
i) What do you mean by antialiasing? Explain with an example.
j) What is the difference between Flood Fill algorithm and Boundary Fill algorithm

Part- II

Q2 Focused-Short Answer Type Questions- (Answer Any EIGHT out of TWELVE) **(6 x 8)**

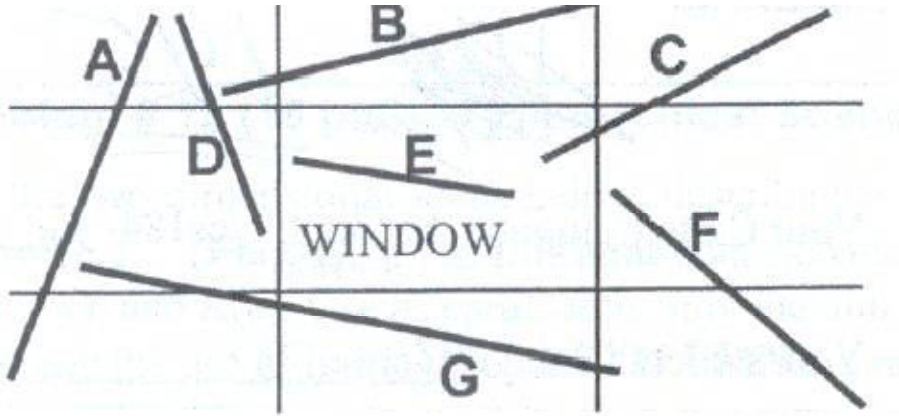
a) Explain the working principle of a Cathode Ray Tube display device with a neat diagram.
b) Compute the intermediate pixels with their coordinates between the starting coordinates as (20, 10) and end-point as (30,18) using Bresenham's line drawing algorithm.
c) Derive the expressions for computing the control points of Bezier curves. Draw a Bezier curve with control points (1,2) ,(3,4), (6,-6) and (10,8) with step size of 0.2 for [x(u), y(u)]
d) Explain the scan-line polygon fill algorithm with an example.
e) Explain the z-buffer algorithm with an example. What is the main limitation of z-buffer algorithm and explain how is it overcome in A-buffer algorithm.
f) Explain the design steps required for animation sequence.
g) Explain the method of Gouraud shading with an example.
h) Explain what do you mean by augmented reality?
i) Explain what do you mean by dithering? How is it overcomed?
j) Explain the terms: projection plane, view plane and view volume with reference to 3D graphics.
k) Differentiate between image space and object space methods with an example.
l) What is animation? Briefly describe the challenges faced in its implementation.

Part-III

Long Answer Type Questions (Answer Any TWO out of FOUR)

Q3 Explain what do you mean by transformation and the operations of transformations both for geometric and coordinate systems with proper example. Rotate a triangle about the origin with vertices at the origin and coordinates A(10,20), B(10,10) and C(20,10) BY 30 degrees. **(16)**

Q4 Explain the mechanism of Cohen-Sutherland line clipping algorithm. For the given figure, determine the line segments or part of it that can be clipped, i.e., find the intersection points of the line segments that need to be clipped: **(16)**



Q5 What d you mean by hidden surface removal? Explain the scan-line and depth-sorting methods. **(16)**

Q6 Why for an illumination model is used? Explain the various kinds of illumination models. **(16)**