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B. E. (Sixth Semester) Examination, April-May 2020

(New Scheme)

(Information Technology Branch)

(Specialization : Information & Technology)

COMPUTER GRAPHICS and ANIMATION

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : *Attempt all questions. Part (a) from each question is comulsory having 2 marks and solve any* ***two*** *parts from remaining parts (b), (c) and (d) of each question having 7 marks. Draw neat sketches wherever necessary.*

Unit-I

1. (a) Define Screen Resolution.

(b) Rasterize a line using DDA algorithm for the points (–1, –2) and (4, 8).

(c) Differentiate between raster scan and random scan.

(d) Perform a counter clockwise 45° rotation of a triangle A(2, 3) B(5, 5) C(4, 3) about a point (2, 2).

Unit-II

2. (a) Define window and viewport.

(b) Why viewing transformation is required? Describe it's steps in detail with the help of a diagram.

(c) Use the Cyrus Beck algorithm to clip line P_1 (–2, 1) to P_2 (8, 4) against a window with lower left hand corner (2, 0) & upper right hand corner (7, 5). Find the intersection points.

(d) How polygon clipping differs from line clipping? Describe Weiler-Atherton polygon clipping algorithm with example.

Unit-III

3. (a) Define Convex Hull and Convex Polygon.

(b) Illustrate the calculation of B-Spline blending functions for a uniform quadratic B-spline with integer knot vector given the parameter values d = 3 and n = 3.

(c) Write and explain the important properties of Bezier curve.

(d) Describe the various continuity conditions with example.

Unit-IV

4. (a) Define projection.

(b) Describe perspective projections in detail.

(c) Why hidden surface removal is required? Describe Painter's algorithm.

(d) Write short notes on :

(i) Bump mapping

(ii) Texture mapping

Unit-V

5. (a) What is Procedural Animation?

(b) What is Fracrals? Also describe it types with example.

(c) Describe Generation of Terrain-random midpoint displacement method.

(d) Write short notes on : (any **two**)

(i) Octrees

(ii) Motion control

(iii) Morphing