

Dr Rajeev Kumar

7/12/2022
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Examination: BTech (Group-I)
Subject: Computer Graphics
Time Allowed: 3 Hrs

Year: Dec 2022
Code: CS-314

Session: July-Dec 2022
Semester: 5th
Max Marks: 50

Name of student:

Roll No:

Note: Each question carries equal marks. Assume sufficient and necessary data if something missing.

1. (a) Define Scan Conversion. Write Bresenham's line generation algorithm. Calculate the points between the starting coordinates (9, 18) and ending coordinates (14, 22). Plot graph for it.
(b) Write a short note on:
 - i. Flat Panel Display.
 - ii. Emissive and Non-Emissive display.
2. (a) What is a homogeneous co-ordinate system? Why is a homogeneous co-ordinate system required? Given a 3D object with coordinate points A(0, 3, 1), B(3, 3, 2), C(3, 0, 0), D(0, 0, 0). Apply the translation with the distance 1 towards X axis, 1 towards Y axis and 2 towards Z axis and obtain the new coordinates of the object.
(b) What are the different polygon surface representation methods? Explain most efficient polygon surface representation method in detail.
3. (a) Give Liang-Barsky line clipping algorithm. A clipping window ABCD is located as follows : A(100, 10), B(160, 10), C(160, 40) D(100, 40) Using Cohen - Sutherland line clipping algorithm, find the visible portion of the line segment EF and GH E(50, 0), F(70, 80), G(120, 20) and H(140, 80). Also give comparison between Liang Barsky and Cohen Sutherland line clipping algorithms.
(b) Explain steps involved in 3D rotation, when rotation axis is inclined in arbitrary direction.
4. (a) Explain viewing pipeline in 2D. Also explain the Sutherland-Hodgman polygon clipping algorithm, with the help of a suitable example and diagrams.
(b) What do you mean by control graph of the curve? Give parametric continuity conditions. Also give properties of Bezier curve/surfaces.
5. (a) Write a short note on RGB Color Model.
(b) Define Ambient Light, Diffuse Reflection, Specular Reflection. Write the merit and demerit of the Phong shading model.

All the Best