Lumbini Engineering, Management & Science College

Final Internal Exam

Level: Bachelors Degree | Year: 2024
Program: Computer 3rd sem. | Full Mark:100
Course: Computer Graphic | Pass Mark: 45

Attempt all the questions

1.a) What is Computer graphics? What is the role of graphics is medical field? (7)

b) Difference between raster scan- display and random-scan display. (8)

2.a) Rasterize the points of given line end points A (-2, -4) and B (-6, -9) using Biesenhom's line drawing algorithm. (8)

b) Translate a triangle ABC with co-ordinates A(0,0), B(5,0) and C(5,5) by 2 unit in X- direction and 3 unit in Y- direction. (7)

3.a) On an average it takes 20 nano sec for a Raster Graphics system to access the pixel value from the frame buffer and glow the phosphor dot on the screen. If the total resolution of the screen is 640*480 will this access rate produce a flickering effect? (8)

OR

Digitize the octant of the circle with radius =7 and Center (20,30) using Mid- point circle drawing algorithm.

b) What is projection? Differentiate Parallel Projection with perspective projection. (7)

4.a) Differeciate RGB color Model with CMYK. (7)

b) Clip the Polygon A (100, 150), B (200, 25) and C (300, 200) with the clipping window defined by the co-ordinate (100, 300), (300, 300) and (300, 100) and (100, 100) using Cohen- Sutherland polygon. Clipping Algorithm. (8)

5.a) What is Bezier curve? Derive Bezier curve equations using 3 control points. (7)

b) What is illumination? Difference between Gouraud shading and Phong shading. (8)

6.a) What is buffer? Explain Z- buffer, A – buffer. (7)

b) What is open GL? What are its primitives? (8)

7. Write short notes on any two. (2*5=10)

a) Ambient light
b) Fast Phong Shading
c) 3D translation
d) Video controller

National Academy of Science and Technology

(Affiliated to Pokhara University)
Dhangadhi, Kailali

Pre University Examination

Level: Bachelor
Programme: BE Computer
Course: Computer Graphics

Semester: Fall_III

Year : 2023
Full Marks: 100
Time : 3hrs.
Pass Marks: 45

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.
Attempt all the questions.

1. a) Explain the need and use of graphics in the field of IT. 7
   b) Explain architecture of Raster scan system with importance of video controller. 8
2. a) What is scan conversion? Derive Bresenham's line drawing algorithm for $|m|<1$. 8
   b) Derive midpoint Ellipse algorithm of region 1. 7
3. a) Why do we need clipping? Explain Cohen-Sutherland Line Clipping algorithm. 8
   b) What will be the final coordinates of a polygon with vertices A(3,4) B(5,4) C(5,2) D(3,2) after it is rotated about a 45 degree angle and fix point (2,3) ? 7
4. a) Differentiate between 2D and 3D graphics? In computer graphics which dimensional is more applicant? 8
   b) Derive quadratic cubic bezier curve. and explain the Bezier curve properties. 7
5. a) Explain Gouraud and Phong shading methods with advantages and disadvantages. 8
   b) What is ambient light and various light reflection? Derive illumination model. 7
6. a) Explain about GKS and different kinds of graphics file formats. 8
   b) What are the drawing basic output primitives of openGL API? 7

7. Write short notes on following **(Any Two)** 5x2
   a) Video controller
   b) DDA
   c) Visualization of Data set

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UNITED TECHNICAL COLLEGE
Semester- Fall

Level: Bachelor
Programme: BE
Course: Computer Graphics

Year : 2023
Full Marks: 100
Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt any three questions from (1-6) and Q.N. 7 is compulsory.

1	a)	What are the differences between computer graphics and image processing? Discuss the major application areas of computer graphics.	8
	b)	Consider two raster systems with resolutions of 640x840 &1280x1024. How many pixels could be accessed per second in each of these systems by a display controller that refreshes the screen at a rate of 60 frames per second? What is the access time per pixel in each system?	7
2	a)	Compare raster scan display system with vector scan display system along with their architectures.	8
	b)	Describe how color pixel is displayed in a computer system?	7
3	a)	Digitize first quadrant of a circle by using midpoint circle generation algorithm center at (4, 3) and radius is 10.	8
	b)	Derive an equation for drawing a line using Bresenham's algorithm for slope less than one.	7
4	a)	Rotate the triangle A (2, 3), B (5, 3) and C (3, 1) about a fixed point (1, 2) by 30^0.	7
	b)	How can you derive a composite transformation matrix for rotating an object in 3D about any arbitrary plane? Write down matrix for each transformation steps.	8
5	a)	Derive a transformation matrix due to perspective projection.	8
	b)	What is control points? Derive a matrix for cubic Bezier curve.	7

6 a) Compare object space method with image space method Explain scan line algorithm for detecting visible surfaces with suitable figure. 4+4

b) Explain the difference between Gouraud and Phong interpolation for the simulation of smooth shading across faceted surfaces. Use a diagram to assist in your explanation. 7

7 Write short notes on: **(Any One)** 1×5

a) RGB Color Model

b) Homogenous Co-ordinates

c) 3D Viewing Pipeline

d) GKS, PHIGS, OpenGL

Pokhara University

Everest Engineering College

Final Internal Assessment
Fall-2023

Level: Bachelor — **F.M. 100**
Program: BE CMP — **P.M. 45**
Faculty: Science & Technology — **Time: 3hrs**
Subject: Computer Graphics (3rd Semester)

Attempt all the questions.

1	a)	Explain the working principle of LCD and LED.	4-
	b)	Explain frame buffer. Calculate the access time for a pixel and row for a graphics system having resolution of 1024*640 and frequency of 60Hz.	2+
2	a)	Rasterize the points of given line end points A(2,3) and B(-3,-5) using Bresenham's line drawing algorithm.	8
	b)	While scan converting an ellipse, how do you know that we have reached the second region of the first quadrant of the ellipse? Explain with expressions.	7
3	a)	What will be the final co-ordinate of a polygon with vertices A(3,4) B(5,4) C(5,2) D(3,4) after it is reflected about a line $y = 2x + 1$?	7
	b)	Explain 2D viewing pipeline. Derive transformation matrix for window to viewport transformation.	8
4	a)	Apply Cohen-Sutherland line clipping algorithm for calculating the saved portion of a line (2,4) to (13,15) in a window ($X_{min} = Y_{min} = 7$ and $X_{max} = Y_{max} = 12$).	8
	b)	Derive the composite matrix for reflection of an object about an arbitrary axis in 3D space.	7
5	a)	Define projection. Differentiate between parallel and perspective projection along with an equation.	7
	b)	Distinguish between image space and object space method. How A-buffer method removes the drawbacks of Z-buffer method.	8

a) Explain Gouraud shading and Phong shading techniques in detail with their advantages and disadvantages. 4+4

b) What is ambient light? Compare diffuse reflection with specular reflection. 7

Write short notes on: (Any two) 2*5 =10

a) Bézier Curve

b) Graphics file format

c) OpenGL

Good Luck

Subject: Computer Graphics

Candidates are required to give answers in their own words as far as practicable.
The figure in the margin indicate full marks.
Attempt all the questions

1.	a) Compare and contrast raster scan display and vector scan display architecture. b) Rasterize the circle with diameter 20 unit.	7 8
2.	a) How flood fill techniques is different from boundary fill technique? Explain with their psuedocode b) Derive a transformation matrix due to perspective projection.	8 7
3.	a) Find the transformation matrix to enlarge double of triangle size formed by coordinates A(0,0),B(1,1),C(5,2) such that point (5,2) remains same. b) Explain two dimensional line clipping algorithm with suitable example.	7 8
4.	a. Describe the rotation of an object about an axis , which is parallel to any of three coordinate axes of coordinate system. b. Explain depth sorting method for visible surface determination with suitable example.	8 7
5.	a. Develop an illumination model for a point source considering the effect of ambient light, diffused and specular reflection. b. Why it is necessary to know about fractal geometry method in computer graphics? Explain.	7 8
6.	a. Define Resolution and refresh rate . How computer graphics is different from image processing? b. Explain beam penetration and shadow mask method for color generation. c. Explain the function in OPENGL for projection and lighting.	5 5 5
7.	Write short notes on **(Any Two)** a. Recent trend in computer graphics b. RGB color model	5 × 2

COSMOS COLLEGE
OF MANAGEMENT AND TECHNOLOGY

Date: 2080/10/19		Full Marks	50
Level	BE	Time	
Programme	BCE	1.5 hrs	
Semester	III		

Term Test II

Subject: - Computer Graphics

- ✓ *Candidates are required to give their answers in their own words as far as practicable.*
- ✓ *Attempt All questions.*
- ✓ *The figures in the margin indicate **Full Marks**.*
- ✓ *Assume suitable data if necessary.*

1. Write the z buffer algorithm for detecting visible surface with its drawback and remedy.[10]

   OR

   Why clipping is needed? Apply cohen Sutherland line clipping algorithm for calculating the saved protion of a line from (2,7) to (8,12) in a window (X_{wmin} and Y_{wmin}= 5 and X_{wmax} and Y_{wmax} = 10).

2. Explain Sutherland Hodgeman polygon clipping algorithm with an example. [10]
3. Explain the 3D viewing pipeline. Explain briefly the significance of world coordinate system, viewing coordinate system, Normalized viewing coordinate system and Device coordinate system in viewing pipeline. 10]
4. Explain GKs and PHIGS. Also explain the available graphical file format [10]
5. How do you represent different objects in 3D. A mirror is placed vertically such that is passes through the points (5,0) and (0,5). Find the reflected view of the triangle ABC with coordinates A(5,30) , B(30,50) , and C (20,60). [10]