

Marks scored:

KATHMANDU UNIVERSITY
End Semester Examination [C]
July, 2017

Level : B. Sc.
Year : III

Course : COMP 342
Semester : I

Exam Roll No. :

Time: 30 mins.

F. M. : 10

Registration No. :

Date : JUL 05 2017

SECTION "A"

[20 Q. \times 0.5 = 10 marks]

Tick (\checkmark) the best answer(s) or fill in the blanks with most appropriate word/phrase.

- Animations are used in _____ application of computer graphics
 Visualization Computer Art
 CAD Presentation Graphics
- If you are drawing an Ellipse with $r_x = 6$ and $r_y = 8$ and center at origin using midpoint algorithm then Initial decision parameter P_{10} for region -1 will be
 -332 -215 332 215
- A line connecting the points (0, 0) and (4, 6) is to be drawn, using DDA algorithm. Find the value of x and y increment
 x-increments = 2/3; y-increments = 1 x-increments = -2/3; y-increments = -1
 x-increments = 1; y-increments = 3/2 x-increments = 1; y-increments = 1
- Refresh CRT consist of:
a) Glass wrapper
b) The electron gun assembly
c) The phosphor viewing surface
 a & b b & c a & c a, b & c
- What do you call the path that electron beam take at the end of each refresh cycle?
 Vertical retrace Horizontal retrace
 Monitor Bandwidth Refresh rate
- The endpoints of a given line are (6, 18) and (0, 0). What will be the equation of this line?
 $y = 3x + 2$ $y = 2x + 3$ $y = 3x$ $y = x/3$
- While Clipping the line using Liang-Barsky line clipping algorithm with endpoints A (2, 3) B (8, 4) against a window (1, 2, 9, 8), what will be the value of P_1 ?
 -1 1 6 -6
- What will be the rotated point of (4, 2) after performing 90° rotation about the origin?
 (-2, 2) (2, -2) (-4, 2) (4, -2)
- A transformation that distorts the shape of an object is called _____
 Reflection Shear Scaling Rotation

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Time : 2 hrs. 30 mins.

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F. M. : 40

SECTION "B"

[6Q × 4 = 24 marks]

Attempt *ANY SIX* questions.

1. Explain how computer graphics can effectively used in the field of computer art and visualization? [4]
2. Describe the architecture of simple random scan system? How long would it take to load a 640 by 480 frame buffer with 12 bits per pixel, if 10^5 bits can be transferred per second? [2+2]
3. Why are homogeneous coordinates used for transformation in Computer Graphics? Determine a sequence of basic transformations that are equivalent to the x-direction shearing matrix? [1+3]
4. Clip 2 lines with coordinates L1 (15, 45, 25, 15) against a rectangular window with dimension R (10, 20, 30, 40) using Cohen-Sutherland line clipping algorithm. [4]
5. What is the importance of hidden surface elimination technique? Explain Z-buffer algorithm with example? [1+3]
6. What do you mean by illumination model? Describe diffuse reflection and Specular reflection? [1+3]
7. Write Short notes on: [2+2]
 - a. RGB color model
 - b. Computer Animation Language

SECTION "C"

[2Q × 2 = 16 marks]

Attempt *ALL* questions.

8. Derive all the required decision parameters for drawing a line using Bresenham line drawing algorithm with $|m| \leq 1$. Using Midpoint circle drawing algorithm, digitize a circle with center (20, 20) and radius 10? [5+ 3]
9. Give the transformation sequence for rotating an object about an axis that is parallel to x-axis? What is principle vanishing point? Derive the transformation matrix for producing perspective projection where the projection reference point lies along the Z-axis? [2 + 1+5]

