Come & Join Us at VUSTUDENTS.net

For Assignment Solution, GDB, Online Quizzes, Helping Study material, Past Solved Papers, Solved MCQs, **Current Papers**, E-Books & more.

Go to **http://www.vustudents.net** and click Sing up to register.

VUSTUENTS.NET is a community formed to overcome the disadvantages of distant learning and virtual environment, where pupils don't have any formal contact with their mentors, This community provides its members with the solution to current as well as the past Assignments, Quizzes, GDBs, and Papers. This community also facilitates its members in resolving the issues regarding subject and university matters, by providing text e-books, notes, and helpful conversations in chat room as well as study groups. Only members are privileged with the right to access all the material, so if you are not a member yet, kindly SIGN UP to get access to the resources of VUSTUDENTS.NET

» » Regards » »
VUSTUDENTS.NET TEAM.
Virtual University of Pakistan

CS602 MCQS N QUESTIONS
$HINING $TAR

www.gooQuestion No: 1 (Marks: 5)

What are the two focusing methods in CRT? Explain briefly.

There are two techniques used in colour CRT monitors:

- Beam Penetration Method
- Shadow Mask Method

In **beam penetration method** two layers of phosphor, usually coated onto the inside of the CRT screen, and the displayed colour depend on how far the electron beam penetrates into the phosphor layers. At intermediate beam speeds, combinations of red and green light are emitted to show two additional colours, orange and yellow. Beam penetration is an inexpensive way to produce colours as only a few colours are possible and the quality of picture is also not impressive.
Shadow mask methods can display a wide range of colours.
In this technique each pixel position is made up of three phosphor dots called triads .Three phosphor dots have different colors i.e. red, green an blue and the display colour is made by the combination of all three dots. Three guns are used to throw beam at the three dots of the same pixel. By varying intensity at each dot a wide range of colours can be generated.

Question No: 2 (Marks: 5)

What is the relation between triads and shadow mask method?

Shadow mask methods can display a wide range of colours.
In this technique each pixel position is made up of three phosphor dots called .Three phosphor dots have different colors i.e. red, green and blue and the display colour is made by the combination of all three dots. Three guns are used to throw beam at the three dots of the same pixel. By varying intensity at each dot a wide range of colours can be generated.

Question No: 3 (Marks: 5)

Discuss in brief the pixel drawing methods.

BIOS routines are standard routines built in VGA cards but these routines are very much slow. We use pixel to draw filled triangle, rectangles and circles and these all will be much slower than direct memory access method. Direct memory access method allows you to write pixel directly by passing the complex BIOS routines. It is easy and faster but its programming is only convenient in mode 13h. Library functions are easier to use and even faster because these are optimized and provided with special drivers by different companies.

Come and Join Us at www.vustudents.ning.com

Question No: 4 (Marks: 10)

What are the steps involved in performing the boundary fill algorithm, also write the pseudo code for the steps you have mentioned above?

Boundary fill algorithm:
The Boundary fill algorithm performs the following steps:
Check the pixel for boundary color
Check the pixel for fill color
Set the pixel in fill color
Run the process for neighbors
The pseudo code for Boundary fill algorithm can be written as:
boundaryFill (x, y, fillColor, boundaryColor)
if ((x < 0) || (x >= width))
return
if ((y < 0) || (y >= height))
return
current = GetPixel(x, y)
if ((current != boundaryColor) && (current != fillColor))
setPixel(fillColor, x, y)
boundaryFill (x+1, y, fillColor, boundaryColor)
boundaryFill (x, y+1, fillColor, boundaryColor)
boundaryFill (x-1, y, fillColor, boundaryColor)
boundaryFill (x, y-1, fillColor, boundaryColor)

Question No: 5 (Marks: 10)

How the locality of a point can be defined with respect to a plane?

Question No: 1 (Marks: 10)

Suppose an RGB raster system is to be designed using an 10*8 inch screen with a resolution of 100 pixels per inch in each direction. If we want to store 12 bits in per pixel in the frame buffer, how much storage (in bytes) do we need for the frame buffer?

Question No: 2 (Marks: 10)

Which algorithm finds the closest integer coordinates to the actual line. Summarize this algorithm and suggest some improvements.

Bresenham's algorithm finds the closest integer coordinates to the actual line, using only integer math. Assuming that the slope is positive and less than 1, moving 1 step in the x direction, y either stays the same, or increases by 1. A decision function is required to resolve this choice.

If the current point is (x_i, y_i), the next point can be either (x_i+1, y_i) or (x_i+1, y_i+1). The actual position on the line is $(x_i+1, m(x_i+1)+c)$. Calculating the distance between the true point, and the two alternative pixel positions available gives:

$d1 = y - y_i$
$= m * (x+1)+b-y_i$
$d2 = y_i + 1 - y$
$= y_i + 1 - m (x_i + 1) - b$

Let us magically define a decision function p, to determine which distance is closer to the true point. By taking the difference between the distances, the decision function will be positive if d1 is larger, and negative otherwise. A positive scaling factor is added to ensure that no division is necessary and only integer math need be used.

$p_i = dx (d1-d2)$
$p_i = dx (2m * (x_i+1) + 2b - 2y_i-1)$
$p_i = 2 dy (x_i+1) - 2 dx\ y_i + dx (2b-1)$ ------------------ (i)
$p_i = 2 dy\ x_i - 2 dx\ y_i + k$ ------------------ (ii)
where $k=2 dy + dx (2b-1)$

Then we can calculate p_{i+1} in terms of p_i without any x_i , y_i or k .

$p_{i+1} = 2 dy\ x_{i+1} - 2 dx\ y_{i+1} + k$
$p_{i+1} = 2 dy (x_i + 1) - 2 dx\ y_{i+1} + k$ since $x_{i+1}= x_i + 1$
$p_{i+1} = 2 dy\ x_i + 2 dy - 2 dx\ y_{i+1} + k$ ------------------ (iii)

Now subtracting (ii) from (iii), we get
$p_{i+1} - p_i = 2 dy - 2 dx (y_{i+1} - y_i)$
$p_{i+1} = p_i + 2 dy - 2 dx (y_{i+1} - y_i)$
If the next point is: (x_i+1, y_i) then
$d1<d2 => d1-d2<0$
$=> p_i<0$
$=> p_{i+1}= p_i + 2 dy$
If the next point is: (x_i+1, y_i+1) then
$d1>d2 => d1-d2>0$
$=> p_i>0$
$=> p_{i+1}= p_i + 2 dy - 2 dx$

The p_i is our decision variable, and calculated using integer arithmetic from pre-computed constants and its previous value. Now a question is remaining how to calculate initial

CS602 MCQS N QUESTIONS

SHINING STAR

value of pi. For that use equation (i) and put values (x1, y1)

pi = 2 dy (x1+1) − 2 dx yi + dx (2b-1)

where b = y − m x implies that

pi = 2 dy x1 +2 dy − 2 dx yi + dx (2 (y1 − mx1) -1)

pi = 2 dy x1 +2 dy − 2 dx yi + 2 dx y1 − 2 dy x1 - dx

pi = 2 dy x1 +2 dy − 2 dx yi + 2 dx y1 − 2 dy x1 - dx

there are certain figures will cancel each other shown in same different colour

pi = 2 dy - dx

Thus Bresenham's line drawing algorithm is as follows:

dx = x2-x1

dy = y2-y1

p = 2dy-dx

c1 = 2dy

c2 = 2(dy-dx)

x = x1

y = y1

plot (x,y,colour)

while (x < x2)

x++;

if (p < 0)

p = p + c1

else

p = p + c2

y++

plot (x,y,colour)

Again, this algorithm can be easily generalized to other arrangements of the end points of the line segment, and for different ranges of the slope of the line.

Improving performance

Several techniques can be used to improve the performance of line-drawing procedures.

These are important because line drawing is one of the fundamental primitives used by most of the other rendering applications. An improvement in the speed of line-drawing will result in an overall improvement of most graphical applications.

Removing procedure calls using macros or inline code can produce improvements.

Unrolling loops also may produce longer pieces of code, but these may run faster.

The use of separate x and y coordinates can be discarded in favour of direct frame buffer addressing. Most algorithms can be adapted to calculate only the initial frame buffer address corresponding to the starting point and to replaced:

X++ with Addr++

Y++ with Addr+=XResolution

Fixed point representation allows a method for performing calculations using only integer arithmetic, but still obtaining the accuracy of floating point values. In fixed point, the fraction part of a value is stored separately, in another integer:

M = Mint.Mfrac

Mint = Int(M)

Mfrac = Frac(M)× MaxInt

Addition in fixed point representation occurs by adding fractional and integer components separately, and only transferring any carry-over from the fractional result to the integer result. The sequence could be implemented using the following two integer additions:

ADD Yfrac,Mfrac ; ADC Yint,Mint

Improved versions of these algorithms exist. For example the following variations exist on Bresenham's original algorithm:

Symmetry (forward and backward simultaneously)

Segmentation (divide into smaller identical segments - GCD(D x,D y))

Double step, triple step, n step

Question No: 3 (Marks: 10)

What could be the ways to implement area filling on raster systems? Summarize scan line polygon filling algorithm in your own words.

There are two basic approaches to area filling on raster systems. One way is to draw straight lines between the edges of polygon called scan-line polygon filling. Second way is to start from an interior point and paint outward from this point till we reach the boundary called boundary-fill.

Question No: 4 (Marks: 1) - Please choose one

Intensity of the electron beam is controlled by setting _____ levels on the control grid, a metal cylinder that fits over the cathode.

►Amplitude

►Current

►**Voltage**

►electron

Question No: 5 (Marks: 1) - Please choose one

True or false. Using Cohen-Sutherland line clipping, it is impossible for a vertex to be labeled 1111.

►**true**

►false

Question No: 6 (Marks: 1) - Please choose one

Shadow mask methods can display a _____ range of colours.

►Small

►**Wide**

►Random

►crazy

Question No: 7 (Marks: 1) - Please choose one

Which one of the following step is not involved to write pixel using video BIOS services.

►Setting desired video mode

►Using bios service to set color of a screen pixel

►Calling bios interrupt to execute the process of writing pixel.

►**Using OpenGL service to set color of a screen pixel**

Question No: 8 (Marks: 1) - Please choose one

Each number that makes up a matrix is called an _____ of the matrix.

►**Element**

►Variable

►Value

►component

Question No. 1 Marks: 05

What is rendering?

Rendering is the process of computing a two dimensional image using a combination of a three dimensional database, scene characteristics, and viewing transformations. Various algorithms can be employed for rendering, depending on the needs of the application.

Question No. 2 Marks: 01

The circle and ellipse are symmetric across 8 octants.

o True

o False

Question No. 3 Marks: 01

UV light is used in Plasma Panel displays to excite phosphor.

o True

o False

Question No. 4 Marks: 01

Which of the following is not true about matrices?

o A + B = B + A

o a(A + B) = aA + aB

o (AT)T = AT

o A + (B + C) = (A + B) + C

Question No. 5 Marks: 05

Why is the Bresenham's line drawing algorithm more efficient than the DDA line drawing algorithm? Give precise one line answer.

Question No. 6 Marks: 01

According to Odd Parity Rule, a point is inside the polygon, if:

o Line from an outside point to this point does not cross the edges odd number of times

o Line from any point to this point crosses the edges odd number of times

o **Line from an outside point to this point crosses the edges odd number of times**

o Line from this point to any point outside the polygon intersects any edge

Question No. 7 Marks: 01

As opposed to direct memory access method, BIOS routines provide an easier and faster method of drawing pixels on screen.

o True

o **False**

Question No. 8 Marks: 06

Describe the Right Handed Rule for determination of direction of axes.

Question No. 9 Marks: 05

What is Viewing Frustum?

Question No. 1 0 Marks: 05

How is the efficiency of circle drawing algorithms improved?

Question No. 1 2 Marks: 01

When a point P(x,y) is rotated by θ the coordinates of transformed point P' are given as:

o **$x' = x \cos(\theta) - y \sin(\theta)$, $y' = x \sin(\theta) + y \cos(\theta)$**

o $x' = y \cos(\theta) - x \sin(\theta)$, $y' = y \sin(\theta) + x \cos(\theta)$

o $x' = x \cos(\theta) + y \sin(\theta)$, $y' = x \sin(\theta) - y \cos(\theta)$

o $x' = y \cos(\theta) + x \sin(\theta)$, $y' = y \sin(\theta) - x \cos(\theta)$

Question No. 1 3 Marks: 01

The amount of time it takes to illuminate a specific location on phosphor coated screen is called Persistence.

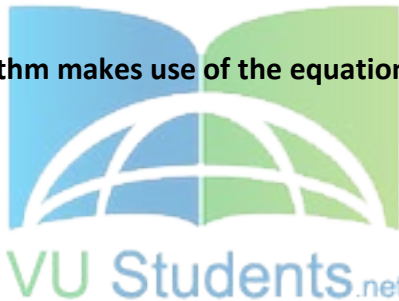o True

o False

Question No. 14 Marks: 05

Give homogeneous translation matrix for 2D transformation.

Question No. 15 Marks: 01

Incremental line drawing algorithm makes use of the equation of straight line.

o True

o False

Question No. 16 Marks: 01

In matrix multiplication:

o The two matrices must be square

o The number of rows of 1st matrix must be the same as the number of columns of the second.

o The two matrices must either be row matrices or column matrices

o The number of columns of 1st matrix must be the same as the number of rows of the second.

Question No. 1 7 Marks: 01

In Horizontal retrace, after completion of all the pixels in a scan line, the refreshing continues from the 1st pixel of the next scan line.

o True

o False

Question No. 1 8 Marks: 01

Parity Rule is used to determine whether a pixel is inside a polygon or not.

o **True**

o False

Question No. 1 9 Marks: 01

In Pixmap exactly one bit is used to hold color value of each pixel.

o True

o **False**

Question No. 20 Marks: 01

When dot product of two vectors equals zero, this implies that the two vectors are:

o parallel to each other

o **orthogonal (perpendicular) to each other.**

o intersect each other

o equal to each other

Question No. 21 Marks: 04

What is meant by Trivial Accept?

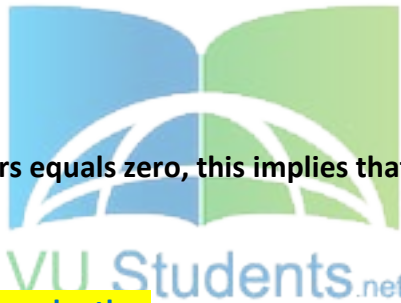It saves a line with both endpoints inside all clipping boundaries.

Question No. 22 Marks: 0

The Boundary Fill and Flood Fill algorithms:

o Must use 4-connected approach

o Must use 8-connected approach

o **May use 4-connected or 8-connected approach**

o Must not use recursive approach

To show 256 colours, the no of bits required for each pixel are

a. 8

b. 16

c. 32

d. 64

2. 25 * 80 resolution with 16 colors supports

a. Text mode

b. Graphics mode

c. Both

d. None

3. Two matrices are said to be equal, if they have

a. same order

b. same corresponding elements

c. Same order and same corresponding elements.

d. Different elements.

4. Two points are said to be collinear, if they lie on the

a. same line

b. different but parallel lines

c. either on the same plane or two parallel planes

d. different plane

5. A Polygon is convex, if the line connecting:

a. Any two points outside the polygon intersects its boundary

b. Any two points inside the polygon don't intersect any edges of the polygon.

c. A point inside the boundary with any point outside, does not intersect the polygon boundary

d. Any two vertices, intersects some edge of polygon.

Question No: 2 Marks: 7

Write the pseudo code to draw a Circle and an Ellipse simultaneously (using their polar coordinate equation and the angle that the points lying on them make with x axis) suppose both are located at the same center **(xc,yc)** , take radius of the circle as **'r'**, semi major radius of ellipse as **'a'** and semi minor radius as **'b'**.

CircleAndEllipse (xc, yc, r , a, b)

For θ = 0 to θ = π/2 step = 1/radius

x_circle = r * cos θ

y_circle = r * sin θ

x_ellipse= a * cos θ

y_ellipse= b * sin θ

DrawSymmetricPoints (xc, yc, x_circle, y_circle,x_ellipse,y_ellipse)

DrawSymmeticPoints (xc, yc, x_circle, y_circle,x_ellipse,y_ellipse)

{

/*For Circle*/

DrawPixel (x_circle + xc, y_circle + yc) [First Quadrant]

DrawPixel (-x_circle + xc, y_circle + yc) [Second Quadrant]

DrawPixel (-x_circle + xc, -y_circle + yc) [Third Quadrant]

DrawPixel (x_circle + xc, -y_circle + yc) [Fourth Quadrant]

/*For Ellipse*/

DrawPixel (x_ellipse + xc, y_ellipse + yc) [First Quadrant]

DrawPixel (-x_ellipse + xc, y_ellipse + yc) [Second Quadrant]

DrawPixel (-x_ellipse + xc, -y_ellipse + yc) [Third Quadrant]

DrawPixel (x_ellipse + xc, -y_ellipse + yc) [Fourth Quadrant]

}

Where

semi_major_ radius = a

semi_minor_ radius = b

radius = r

Question No: 3 Marks 7

a. Find in which quadrant the point (-2, 3) lies in 2D plane.

b. Consider these 3-D vectors:

A = [9,8,7]

B = [4,7,3]

C = [2,9,6]

Compute:

i) A.BxC

ii) AxB.C

c. What is the main difference between

i) Orthographic projection

ii) Oblique projection

a) 2nd quadrant

b) BxC =[7x6 - 3x9 , 3x2 - 4x6 , 4x9 – 7x2] =[15,-18,22]

A.BxC =9x15 +8x(-18)+7x22= 135-144+154=145

AxB =[8x3 - 7x7 , 7x4 - 9x3 , 9x7 – 8x4] =[-25,1,31]

AxB.C =-25x2+1x9+31x6 = -50 + 9+186=145

Orthographic Projection

If the direction of projection is perpendicular to the projection plane then it is an **orthographic** projection.

Oblique Projection

If the direction of projection is not perpendicular to the projection plane then it is an **oblique** projection.

Question No: 4 Marks: 4

a) Suppose we want to perform 3D scaling using homogenous coordinates with respect to a point Q (x1,y1,z1) Derive the matrix we should use for this purpose. take (Sx = 6, Sy = 4 , Sz

= 7)

b) Suppose we want to perform 3D Rotation of 180 degrees about Y-Axis using homogenous coordinates using Reflection, Give the matrix that can do this task.

Scaling with respect to a selected fixed position:

Scaling with respect to a selected fixed position (x1,y1,z1) can be represented with the following transformation sequence:

1. Translate the fixed point to the origin.

2. Scale the object relative to the coordinate origin

3. Translate the fixed point back to its original position

The reflection transformation operation is equivalent to rotation of 180 degrees so we can use the following transformation matrix using homogenous coordinates to perform the rotation of 180 degrees about y axis,

Question No: 5 Marks: 7

Clearly Explain the Following:

a. Why in Scan Line Filling Algorithm we don't put the edges having 1/m = 0 in active edge table.

b. In matrix multiplication the number of columns of first matrix should be equal to number of rows of second matrix.

a. In Scan line filling algorithm we don't put the edges having 1/m in active edge table because we treat it as special a case. If this edge is at the minimum y value for all edges, it is drawn.

Otherwise, if the edge is at the maximum y value for any edge, we do not draw it.

b. Because we multiply the rows of first matrix by the column of second matrix so if we don't have the number of corresponding elements equal, we would not be able to multiply the matrices

1. Polygon is complex, if the line connecting:

a. Any two points outside the polygon intersects its boundary.

b. Any two points inside the polygon intersects its boundary.

c. A point inside the boundary with any point outside does not intersect the polygon boundary.

d. Any two vertices, intersects some edge of polygon.

2. The equation of hyperbola centered at origin (if the transverse axis is along x -axis) can be given as:

a. $x^2 b^2 + y^2 a^2 - 1 = 0$

b. $x^2 b^2 + y^2 a^2 + 1 = 0$

c. x2 a2– y2 b2–1 = 0

d. x2 b2 – y2 a2–1 = 0

3. Which of the following statements is not true about flood-fill and boundary-fill algorithms?

a. Both are used for filling of close figure

b. Both can be implemented as recursive as well as iterative methods

c. Flood-fill is best for filling of triangle

d. A complex polygon can be filled with 8 connected approach

4. Which one is not valid out code to perform trivial accept / reject test in line clipping:

a. 1101

b. 1001

c. 0101

d. 0110

5. Which one of the following is not the graphics library is use:

a. FastGL

b. OpenGL

c. DirectX

d. EasyGL

Question No 2 Marks: 5

Write the pseudo code to draw an ellipse located at the center **(xc, yc)** (using its polar equations and the angle that the points lying on it make with x axis) such that the length of its semi minor radius is equal to half of its semi major radius take semi major radius of the ellipse as **'a'**.

Solution:

Ellipse (xc, yc, a)

For θ = 0 to θ = π/2 step = 1/a

x_ellipse= a * cos θ

y_ellipse= a/2 * sin θ

DrawSymmetricPoints (xc, yc,x_ellipse,y_ellipse)

DrawSymmeticPoints (xc, yc,x_ellipse,y_ellipse)

{

DrawPixel (x_ellipse + xc, y_ellipse + yc) [First Quadrant]

DrawPixel (-x_ellipse + xc, y_ellipse + yc) [Second Quadrant]

DrawPixel (-x_ellipse + xc, -y_ellipse + yc) [Third Quadrant]

DrawPixel (x_ellipse + xc, -y_ellipse + yc) [Fourth Quadrant]

}

Where

semi_major_ radius = a

semi_minor_ radius = a/2

Question No 3 Marks: 4+2

1. Suppose a man is standing at the point P= (-3,2,3) and it is looking along the vector

V = [4,9,11]

Determine whether the man would be able to see a point P' (1, 0, 1) or not.

2. Find the distance between the points (-2,3) and (-6,6)

Solution:

First we will find Test vector T as follows:

T = [(-3-1),(2-0),(3-1)]

So,

T= [-4,2,2]

Now Finding

T.V = -16+ 18 + 22

= +24

As T.V > 0

Question No 4 Marks: 6 + 2

I. Differentiate between the following:

a. Concave and convex polygons.

b. Complex and concave polygons.

c. Filled and Unfilled Polygons.

II. Give the short answers to the following:

a. How we can find that whether a point lies inside a polygon or not?

b. Describe any case in which Boundary fill algorithm may fail.

Difference between concave and convex polygons

If a straight line connecting any two points that are inside the polygon intersects any edges of the polygon, then this polygon is called Concave polygons, otherwise it will be convex one.

Difference between Complex and Convex polygons

In complex polygons the vertices intersect some edge of the polygon whereas in convex polygons they can not.

Difference between Filled and Unfilled Polygon In an unfilled polygon, only the points on the perimeter of the polygon are drawn. Whereas, in filled polygons all the interior points of the polygon must be filled. This means that all of the pixels within the boundaries of the polygon must be set to the specified color or pattern.

II

a) How we can find that whether a point lies inside a polygon or not?

To test it, draw a line segment from any point that lies outside the polygon to a point P that we wish to determine whether it is inside or outside of the polygon. Count the number of edges that the line crosses. If the number of polygon edges crossed is odd, then P lie within the polygon. Similarly, if the number of edges is even, then P lies outside of the polygon.

b) The boundary fill algorithm may fail in the case of Complex Polygons.

Clearly Explain the Following:

a. How can we tackle edges meeting at a vertex and for both edges the vertex is the minimum point in scan line filling algorithm.

b. In which of planes given below the Point P(2,0,3) lies

i) xy plane

ii) yz plane

iii) zx plane

c. Why the Cohen-Sutherland Line-Clipping Algorithm involves much more calculations than the other line clipping algorithms.

a. We tackle the edges meeting at a vertex in scan line by incrementing the parity in scan line algorithm twice and filling the point at the vertex.

b. ZX plane.

c. We need much more calculations in Cohen Stherland line clipping Algorithm because we have to perform trivial accept / Reject test for every point on the line this consumes a lot of computational power and time.

Parity is a concept used to determine which _____ lie within a polygon.

▶ **Select correct option:**

○ Edge

○ Vertices

○ Pixels

○ Points

Various curve functions are useful in _____.

▶ **Select correct option:**

○ Object modeling

○ Graphics applications

○ Animation path specifications

Come and Join Us at www.vustudents.ning.com

All of the given

▶ Click here to Save Answer & Move to Next Question

---

polygons are basically concave polygons that may have self-intersecting edges.

▶ **Select correct option:**

Complex

Hybrid

Convex

Convex and Hybrid

▶ Click here to Save Answer & Move to Next Question

Concave polygons are a superset of _____ polygons, having fewer restrictions than _____ polygons.

▶ **Select correct option:**

Hybrid, Complex

Concave, Complex

○   Convex, Convex

○   Complex, Complex

▶ Click here to Save Answer & Move to Next Question

There are _____ basic types of polygon.

▶ **Select correct option:**

○ 2

○   3

○ 4

○ 5

▶ Click here to Save Answer & Move to Next Question

Both Boundary Filling and Flood filling algorithms are _____ as compared to scan line filling algorithm.

▶ **Select correct option:**

○ Better

○ Worse

○ Almost same

○ Good

▶ Click here to Save Answer & Move to Next Question

We can draw eight points corresponding to each (x , y) point calculation in _____ drawing algorithm.

▶ **Select correct option:**

○ Sutherland

○ Mid Clipping

○ Mid Point Circle

○ Sutherland Clipping

▶ Click here to Save Answer & Move to Next Question

the horizontal refresh ------------------------------

▶ **Select correct option:**

○ Is no longer used in any system

Is distracting and can cause eye fatigue

Fools the human eye into thinking the horizontal refr

Click here to Save Answer & Move to Next Question

Computer graphics is very helpful in producing graphical representations for scientific visualization

Computer graphics is very helpful in producing graphical representations for scientific visualization.

Select correct option:

True

False

In video text memory, _____ are used to display a character.

Select correct option:

2 bytes

4 bytes

8 bytes

16 bytes

In _____ algorithm(s), old color must be read before it is invoked.

Select correct option:

Scan line filling

Flood filling

Both scan line and flood filling

Scan filling

According to the architecture of raster graphics system, display processor memory will act as _____.

Select correct option:

Video controller

System memory

Frame buffer

Video controller and System memory

Cross product of two vectors result in a _____.

Select correct option:

○ Magnitude

○ Vector

○ Scalar

○ Value

▶ Click here to Save Answer & Move to Next Question

Shortcoming of Sutherland-Hodgeman Algorithm is concave polygons may be displayed with extensors lines

Shortcoming of Sutherland-Hodgeman Algorithm is concave polygons may be displayed with extraneous lines

▶ **Select correct option:**

○ True

○ False

▶ Click here to Save Answer & Move to Next Question

In 2D transformations, two successive rotations applied to a point P can be denoted as_____ (Where ? represents theta).

▶ **Select correct option:**

○ P' = R(?1 + ?2) . P

○ P' = (R(?1) + R(?2)) . P

○ P' = R(?1 x ?2) . P

○ P' = R(?1) . P

A straight line can be moved to another location by applying _____ to each of the line endpoints and redrawing the line between the new coordinates.

🚩 **Select correct option:**

○ Rotation

○ Translation

○ Reflection

○ Scaling factor

If the values of scaling factors sx and sy are less than 1, then size of object will be _____.

🚩 **Select correct option:**

○ Reduced

○ Remain same

○ Enlarged

○ Shear

Click here to Save Answer & Move to Next Question

Global coordinate systems can be defined with respect to local coordinate system

▶ **Select correct option:**

○ True

○ False

Click here to Save Answer & Move to Next Question

Locations can be translated or "transformed" from one coordinate system to the other.

▶ **Select correct option:**

○ True

○ False

CS602 MCQS N QUESTIONS
$HINING $TAR

If the value of scaling factors sx and sy is greater than 1, then size of objects will be _____.

Select correct option:

O Reduced

O Enlarged

O Remain same

O Shear

Click here to Save Answer & Move to Next Question

A column matrix is also known as _____.

Select correct option:

O Column vector

O Row vector

O Vector

O Simple Matrix

Click here to Save Answer & Move to Next Question

Dot product of two vectors results in _____ quantity.

► **Select correct option:**

◌ | Scalar |

◌ | Vectors |

◌ | Magnitude |

◌ | Value |

► Click here to Save Answer & Move to Next Question

vu Students.net

Quiz Start Time: 09:17 PM

Time Left 71 sec(s)

Question # 1 of 10 (Start time: 09:17:35 PM)   Total Marks: 1

Normalized cross product of two vectors on that surface provides normal vector

► Select correct option:

◌ **Yes**

◌ No

Quiz Start Time: 09:17 PM

Time Left **71** sec(s)

Question # 2 of 10 (Start time: 09:18:16 PM)   Total Marks: 1

Set up your tripod and pointing the camera at the scene

▶ Select correct option:

◌   projection transformation

◌   viewport transformation

◌   modeling transformation

◌   **viewing transformation**

CS602 MCQS N QUESTIONS
$HINING $TAR

Question # 3 of 10 (Start time: 09:19:39 PM)   Total Marks: 1

_____ is based on characteristic size or scale

▶ Select correct option:

⬚ **Fractal Geometry**

⬚ Traditional Geometry

⬚ Euclidean Geometry

⬚ None of Above

VU Students.net

▶ | Click here to Save Answer & Move to Next Question |

Question # 4 of 10 (Start time: 09:20:28 PM)   Total Marks: 1

Bernstein polynomial functions are the basic functions of _____ curves.

▶ Select correct option:

⊙ NURBS

⊙ **Bezier**

⊙ Both NURBS and Bazier

⊙ None of the given

Click here to Save Answer & Move to Next Question

Quiz Start Time: 09:17 PM

Time Left **70** sec(s)

Question # 5 of 10 (Start time: 09:21:13 PM)   Total Marks: 1

Silhouette edges occur when dot product of surface normal vector and the view vector is _____.

▶ Select correct option:

⊙ **Zero**

⊙ One

○ Both zero and one

○ None of the given

[Click here to Save Answer & Move to Next Question]

Quiz Start Time: 09:17 PM

Time Left **84** sec(s)

Question # 6 of 10 (Start time: 09:21:42 PM)

Total Marks: 1

A fractal is generally a property called _____.

▶ Select correct option:

○ **Fractal Dimension**

○ Self-similarity

○ Koch Curve

○ None of above

[Click here to Save Answer & Move to Next Question]

Quiz Start Time: 09:17 PM

Time Left 53 sec(s)

Question # 7 of 10 (Start time: 09:22:21 PM)

Total Marks: 1

The curve is always contained within the _____ of the control points

▶ Select correct option:

◻ Tangents

◻ Convex Hull

◻ Subdivision

◻ **None of Above**

▶ Click here to Save Answer & Move to Next Question

Come and Join Us at www.vustudents.ning.com

CS602 MCQS N QUESTIONS
$HINING $TAR

Question # 8 of 10 (Start time: 09:23:13 PM)   Total Marks: 1

_____ OpenGL function is used for aiming and positioning the camera towards the object

🚩 Select correct option:

◻ **glLoadIdentity()**

◻ gluLookAt()

◻ glFrustum()

◻ None of Above

🚩 | Click here to Save Answer & Move to Next Question |

Come and Join Us at www.vustudents.ning.com

CS602 MCQS N QUESTIONS
$HINING $TAR

Bezier curve can represent the more complex piecewise _____ curve.

▶ Select correct option:

⟳   **Polynomial**

⟳   Exponential

⟳   Cubic

⟳   None of above

Click here to Save Answer & Move to Next Question

VU Students.net

Quiz Start Time: 09:17 PM   Time Left **87** sec(s)

Perspective projection is specified with the function glFrustum().

▶ Select correct option:

⟳   **Yes**

No

- How you define Composite Transformation? ---- (2 Marks)

- Differentiate between Reflection and shear in context of 3-D. ------- (2 Marks)

- What is the major reason for preferring Midpoint circle algorithm on Cartesian coordinates when drawing a circle? --- (2 Marks)

- What is Viewing Frustum? ------- (3 Marks)

- Aik kafi lambi statement thi aur question ye tha "Can you scale more then one time. If yes then in which method and also write the mathematical expression" ---- (3 Marks)

- Differentiate between Cavalier and Cabinet projection ----- (5 Marks)

Aik 3-D image dia howa tha aur question ye tha " Explain concept which show in diagaram ------ (5 Marks

Which of the following is NOT a modern application for Computer Graphics------------------

► Stop-motion animation

► Computer Aided Geometric Design

► Video Games

► Scientific Visualization

Question No: 2   (Marks: 1)   - Please choose one

CS602 MCQS N QUESTIONS $HINING $TAR

Both Boundary Filling and Flood filling algorithms are non-recursive techniques,

► False

► **True**

http://www.vustudents.net

Question No: 3   (Marks: 1)   - Please choose one

TV series are made as simply as possible from the animation point of view. This approach is generally known as ------------------------

► Full animation

► **Limited animation**

► Low animation

► High resolution

Question No: 4   (Marks: 1)   - Please choose one

An eight frame run cycle that ------------------ frame/frames to each step gives a fast and vigorous dash. At this speed the successive leg positions are quite widely separated and may need dry brush or speed lines to make the movement flow.

► Two

► One

► Three

► **Four**

Question No: 5   (Marks: 1)   - Please choose one

Come and Join Us at www.vustudents.ning.com

---- reflection is the effect of reflecting light toward the direction from which it came, no matter the orientation of the surface.

► Forward scattering

► Diffuse Lambertian

► Backscattering

► Retro

Question No: 6   (Marks: 1)   - Please choose one

What makes this really challenging to model is that the index of refraction for most materials is a function of the------------------- of the light. This means that not only is there a shift in the angle of refraction, but that the shift is different for differing --------------of light.

► Reflecting angle, Reflecting angle

► Refracting angle, Refracting angle

► Frequency, Frequency

► Wavelength, Wavelength

Question No: 7   (Marks: 1)   - Please choose one

-- The reflected light wave turns out to be a --------------------case since light is reflected at the same angle as the incident wave (when the surface is smooth and uniform, as we'll assume for now).

► Abnormal

► Complex

► Simple

► Unknown

Question No: 8   (Marks: 1)   - Please choose one

Tessellation can be adaptive to the _____ degree of curvature of a surface.

► Local

► Static

► Global

► Variable

Question No: 9   (Marks: 1)   - Please choose one

_____ sets the reshape callback for the *current window*. The reshape callback is triggered when a window is reshaped.

⬚ glutMainLoop

⬚ glutIdleFunc

⬚ glutReshapeFunc

⬚ glutDisplayFunc

Question No: 10   (Marks: 1)   - Please choose one

Signed integer color components, when specified, are linearly mapped to floating-point values such that the most positive representable value maps to 1.0, and the most negative representable value maps to -----------------. Floating-point values are mapped directly.

⬚ -1.0

⬚ 0.0

⬚ 2.0

CS602 MCQS N QUESTIONS
$HINING $TAR

 1.0

Question No: 11   (Marks: 1)   - Please choose one

NURBS stands for-----------------------.

     Non Universal Rational Binary Spline

     Non Uniform Rational Binary Splines

     Non Uniform Rational Beta Splines

     Non Universal Rational Beta Splines

Question No: 12   (Marks: 1)   - Please choose one

An orthogonal set of vectors----------------------------

     Must be a set of linearly independent vectors

     Must be a set of linearly dependent vectors

     Must be made up of the basis vectors (e1, e2, and e3)

     Can be made up of any set of vectors

Question No: 13   (Marks: 1)   - Please choose one

Bezier curve is numerically the ----------------------- of all the polynomial-based curves used in these applications.

     ► None of the given

     ► Most stable

► Less stable

► Most unstable

Question No: 14   (Marks: 1)   - Please choose one

Bezier curve is the ideal standard for representing the -------------------------- piecewise polynomial curves.

► None of the given

► Non complex

► Most complex

► <mark>More complex</mark>

Question No: 15   (Marks: 1)   - Please choose one

Keep polygon orientations consistent to make sure that when viewed from the outside, all the polygons on the surface are oriented in the same direction.

► None of the given

► Neither

► Different

► <mark>Same</mark>

Question No: 16   (Marks: 1)   - Please choose one

The ---------------- is most simple example that exhibits the property self similarity.

► Mosse

► **Fern**

► None of the given

► Thohar

Question No: 17   (Marks: 1)   - Please choose one

A common mistake people make when creating three-dimensional graphics is to start thinking too soon that the final image appears on a flat, two-dimensional screen. Avoid thinking about which pixels need to be drawn, and instead try to visualize ---------------- space.

☐ Multi-dimensional

☐ One-dimensional

☐ Two-dimensional

☐ **Three-dimensional**

Question No: 18   (Marks: 1)   - Please choose one

Which of the following properties of rational Bezier curves fails if the weight assigned to a control point is negative?

☐ End-point interpolation

☐ Variation Diminishing

☐ Symmetry

Question No: 19   (Marks: 1)   - Please choose one

In the Phong reflection model, there are 3 constants (a, b, c) which are used to describe the qualities of which of the following phenomena?

► The attenuation of a point light source with distance

► The size (in each dimension) which the light is assumed to have

► The amount to perturb reflection vectors as they are mirrored across the normal

► The material reaction to ambient, diffuse and specular light (respectively)

Question No: 20   (Marks: 1)   - Please choose one

The Phong reflection model simplifies light-matter interactions into (essentially) 4 vectors and a number of constants. Which piece of the Phong model is responsible for giving spheres their bright white spots?

► Specular

► Diffuse

► Ambient

Question No: 21   (Marks: 1)   - Please choose one

When you hit a surface in ray tracing, generally shadow rays are tested against all objects in a scene. If these rays come back saying they hit an object in the scene, which of the following do you do?

► add all components (i.e. ambient, diffuse and specular) from that light source to the object.

► add all EXCEPT the ambient light from that light source to the object (i.e. diffuse and specular)

► add only the ambient light from that light source to the object

► add none of the light from that light source to the object

Question No: 22   (Marks: 1)   - Please choose one

The ColorSpace tool is a handy tool that we can use to interactively add two colours together to see the effects of the various strategies for handling oversaturated colours.

► False

► True
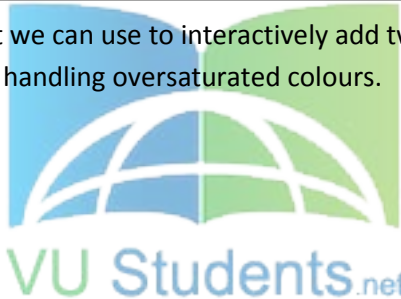
Question No: 23   (Marks: 1)   - Please choose one

A polygon is usually defined by a sequence of ------------ and Edges.

► Ending lines

► Points

► Vertices

► Edges

Question No: 24   (Marks: 1)   - Please choose one

Which of the following properties of Bezier curves guarantees that a line passes through the control polygon as many times or more times than the line passes through the Bezier curve itself?

► End-point interpolation

► Variation Diminishing

► Symmetry

► Convex-Hull

uestion No: 25   (Marks: 1)   - Please choose one

Parity is a concept used to determine which _____ lie within a polygon. (Choose best suitable answer)

► Edge

► Vertices

► Pixels

► None of the given

Question No: 26   (Marks: 1)   - Please choose one

_____ The actual filling process in boundary filling algorithm begins when a point _____ of the figure is selected.

⬜ Outside the boundary

⬜ Inside the boundary

⬜ At boundary

⬜ None of the given

Question No: 27   (Marks: 1)   - Please choose one

_____

Weiler-Atherton Polygon Clipping technique modify the vertex-processing procedures for window boundaries so that _____ polygons are displayed correctly.

☐ Convex

☐ Concave

☐ Complex

☐ None of the given

Question No: 28   (Marks: 1)   - Please choose one

_____ If a line connecting any two points within a polygon does not intersect any edge, then it will be a _____ polygon.

☐ Convex

☐ Concave

☐ Complex

☐ None of the given

Question No: 29   (Marks: 1)   - Please choose one

_____

_____ can be defined as a mapping of point **P(x, y, z)** onto its image **P`(x`, y`, z`)** in the view plane which constitutes the display surface.

☐ Mapping plane

☐ Three Coordinate Planes

☐ View plane

☐ Projection

Question No: 30   (Marks: 1)   - Please choose one

_____ The reflected light wave turns out to be a / an _____ case since light is reflected at the same angle as the incident wave (when the surface is smooth and uniform, as we'll assume for now).

▢ Unknown

▢ <mark>Simple</mark>

▢ Complex

▢ Abnormal

Question No: 31   (Marks: 2)

_____

Write down the equation of tangent vector (should be in the form of parametric functions)?

Question No: 32   (Marks: 2)

_____

What is meant by spotlight?

A light containing a minimum of the following parameters: light location, target location and penumbra.

Theater lights or bulbs enclosed in a lamp shade are good examples of spotlights. A spot light is like a point light, but its light rays are restricted to a well defined cone. It is often used to direct the viewers eye to certain parts of the scene.

Question No: 33   (Marks: 2)

Describe polygon clipping briefly.

An algorithm that clips a polygon is rather complex. Each edge of the polygon must be tested against each edge of the clipping window, usually a rectangle. As a result, new edges may be added, and existing edges may be discarded, retained, or divided. Multiple polygons may result from clipping a single polygon. We need an organized way to deal with all of these cases.

Question No: 34   (Marks: 2)

How the world look like in following situations?

1. Without ambient light
2. With too much ambient light

Ambient light means the light that is already present in a scene, before any additional lighting is added. It usually refers to natural light, either outdoors or coming through windows etc. It can also mean artificial lights such as normal room lights.

Photography and video work rely largely or wholly on ambient lighting.

Ambient light can be a real trouble if it conflicts with what the photographer wants to achieve. For example, ambient light may be the wrong color temperature, intensity or direction for the desired effect. In this case the photographer may choose to block out the ambient light completely and replace it with artificial light.

Question No: 35   (Marks: 3)

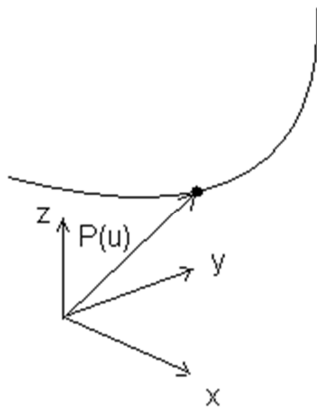Give (Conditions) at least three points to draw good computer generated lines?

Question No: 36   (Marks: 3)

Differentiate between functions using gl and glu prefixes of glut library?

Question No: 37   (Marks: 3)

Explain following figure in term of drawing curve:

   Each point on a curve is defined by a vector p (figure 1). The components of this vector are x(u), y(u), and z(u). We express this as

$$p = p(u) \quad LLL(2)$$ Which says that the vector **p** is a function of the parametric variable u. There is a lot of information in equation 2. When we expand it into component form, it becomes

$$p(u) = [x(u) \, y(u) \, z(u)] \quad LLL(3)$$

The specific functions that define the vector components of p determine the shape of the curve. In fact, this is one way to define a curve – by simple choosing or designing these mathematical functions. There re only a few simple rules that we must follow: 1) define each component by a single, common parametric variable, and 2) make sure that each point on the curve corresponds to a unique value of the parametric variable. The last rule can be put another way: each value of the parametric variable must correspond to a unique point on the curve.

Question No: 38   (Marks: 3)

Which OpenGL command is used to define material properties of the object, also name two of these properties?

predefine the material properties which will be consequently assigned to objects when you define them with the glColor command. This is done by making the following call:

glColorMaterial(GL_FRONT, GL_AMBIENT_AND_DIFFUSE);

Question No: 39   (Marks: 5)

What is difference between glLoadIdentity function and glLoadMatrix function ?

The **glLoadIdentity** function replaces the current matrix with the identity matrix. It is semantically equivalent to calling **glLoadMatrix** with the identity matrix

$$\begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

but in some cases it is more efficient.

Error Codes

The following is the error code and its condition.

GL_INVALID_OPERATION: **glLoadIdentity** was called between a call to **glBegin** and the corresponding call to **glEnd**.

glLoadMatrix replaces the current matrix with the one whose elements are specified by m . The current matrix is the projection matrix, modelview matrix, or texture matrix, depending on the current matrix mode (see glMatrixMode).

Question No: 40   (Marks: 5)
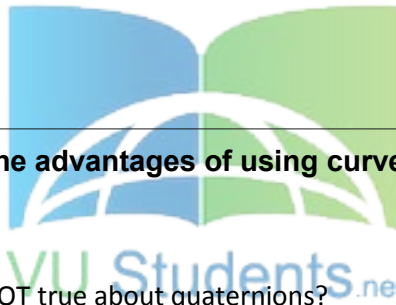
_____ **Why do we use curves? What are the advantages of using curves?**

1) Which of the following is NOT true about quaternions?
    a) They are made up of 4 numbers

    b) They should always be normalized to length 1

    c) **They can be used to represent all affine transforms**

    d) They can be used to define the rotation of an object

2) Which of the following does NOT figure into the Field of View of a pinhole camera?
    a) **The direction of projection**
    b) The distance from the center of projection to the projection plane
    c) The size of the projection plane

3) This projection technique has the direction of projection perpendicular to the viewing plane, but the viewing direction is NOT perpendicular to one of the principle faces.
    a) Orthographic Parallel Projection
    b) **Axonometric Parallel Projection**
    c) Oblique Parallel Projection

4) This projection technique does NOT have the direction of projection perpendicular to the viewing plane.
    a) Orthographic Parallel Projection
    b) Axonometric Parallel Projection
    c) **Oblique Parallel Projection**

5) This projection technique has the direction of projection perpendicular to the viewing plane, and the viewing direction is perpendicular to one of the principle faces.
   a) **Orthographic Parallel Projection**
   b) Axonometric Parallel Projection
   c) Oblique Parallel Projection

6) When transforming a random Axis-Aligned Bounding Box defined by the points (near$_x$, near$_y$, near$_z$) and (far$_x$, far$_y$, far$_z$) to the standard orthographic viewing box, which affine transforms are used?
   a) shear and translation
   b) rotation and scale
   c) scale and shear
   d) **translation and scale**

7) In class, we discussed the purpose of the front and back clipping planes in OpenGL. Which of the following was NOT a purpose for using clipping planes?
   a) division by zero
   b) objects behind the center of projection mapping onto the projection plane
   c) **avoiding the problems of infinite viewing volume size**

8) In class, we discussed how the image of the Double Eagle Tanker was obtained for the large poster in the main hall of Sitterson. It required rendering several perspective images using OpenGL. Which of the following was NOT a step required in that process?
   a) handling projection planes non-orthogonal to the viewing direction
   b) cutting a single projection plane into many separate projection planes
   c) rotating the viewing direction to be the same as the –z direction
   d) **handling several different centers of projection**

9) In OpenGL, there are several different matrices. We have discussed two of them in class. Which one of the below would be used in conjunction with a glRotatef function call?
   a) **GL_MODELVIEW**
   b) GL_PROJECTION

10) In OpenGL, there are several different matrices. We have discussed two of them in class. Which one of the below would be used in conjunction with glFrustum?
    a) GL_MODELVIEW
    b) **GL_PROJECTION**

11) Which of the following is the order that geometry operations are performed in OpenGL (where we read the order from left to right)?
    a) GL_PROJECTION → GL_MODELVIEW → Perspective division
    b) **GL_MODELVIEW → GL_PROJECTION → Perspective division**
    c) Perspective division → GL_PROJECTION → GL_MODELVIEW
    d) GL_MODELVIEW → Perspective division → GL_PROJECTION
    e) GL_PROJECTION → Perspective division → GL_MODELVIEW

For the next 4 questions, match the pictures on the right with the corresponding term on the left. The arrows in the picture denote light rays. The dashed lines represent the material type to be considered. The key is in the interaction of the light rays with the material.
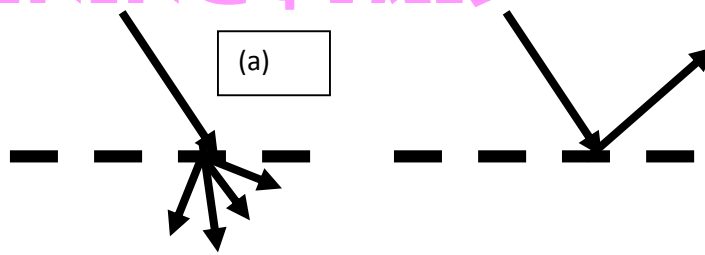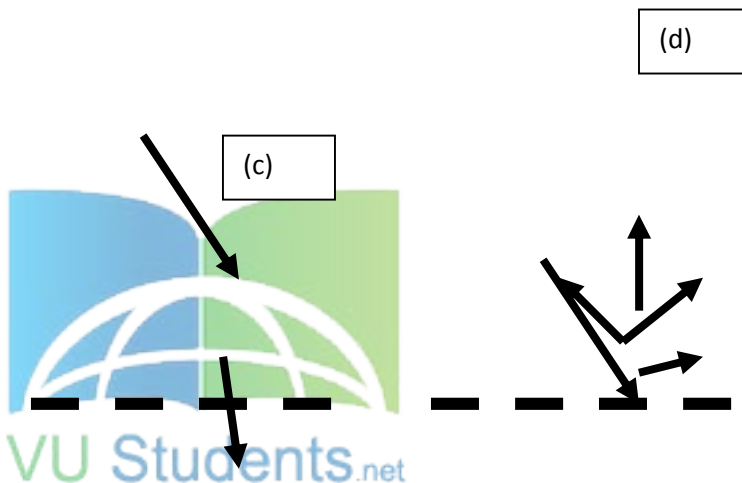
12) Specular

(b)

13) Diffuse
14) Transparent
15) Translucent

(a)

answers: b,d,c,a

(d)

(c)

16) In "Utah" graphics, lights are simplified in order to approximate light/matter interaction with a minimum amount of work. Which of the following is NOT true about the simplifications made in "Utah" graphics lights?
    a) Light intensity and color are folded into one value.
    b) Lights are assumed to have zero size
    c) **Spotlights can not be handled**
    d) Soft shadows can not be handled

17) The Phong reflection model simplifies light-matter interactions into (essentially) 4 vectors and a number of constants. Each piece of the Phong model uses different vectors and constants. Which portion does NOT include taking a dot product?
    a) **Ambient**
    b) Diffuse
    c) Specular

18) The Phong reflection model simplifies light-matter interactions into (essentially) 4 vectors and a number of constants. Which piece of the Phong model is responsible for giving spheres their bright white spots?

a) Ambient
b) Diffuse
c) **Specular**

19) The Phong reflection model simplifies light-matter interactions into (essentially) 4 vectors and a number of constants. Which of the following is NOT a vector needed for the Phong reflection model?
a) Surface Normal
b) Direction to Viewer
c) **Direction to Material Center**
d) Direction to Light

20) True or false: In the Phong Reflection model, ambient light is the same everywhere.
a) **true**
b) false

21) In the Phong reflection model, there are 3 constants (a, b, c) which are used to describe the qualities of which of the following phenomena?
a) The material reaction to ambient, diffuse and specular light (respectively)
b) The amount to perturb reflection vectors as they are mirrored across the normal
c) The size (in each dimension) which the light is assumed to have
d) **The attenuation of a point light source with distance**

22) As discussed in class, when obtaining normals for a triangle, which of the following mathematical constructs is NOT used?
a) Point-Point subtraction
b) **Vector dot products**
c) Vector cross products
d) Vector normalization

1) We discussed several global illumination algorithms in class. Which of the following listed can properly handle diffuse-diffuse reflections
   a) Ray Tracing
   b) Radiosity
   c) Photon Mapping
   d) RenderMan

2) We discussed several global illumination algorithms in class. Which of the following is generally characterized by shiny spheres and checkerboards?
   a) Ray Tracing
   b) Radiosity
   c) Photon Mapping
   d) RenderMan

3) We discussed several global illumination algorithms in class. Which of the following listed can properly handle caustics?
   a) Ray Tracing
   b) Radiosity
   c) Photon Mapping
   d) RenderMan

4) In radiosity a matrix is formed of size mxm. Which of the following can be known if the (i, j) position in the matrix is zero?
   a) patch i is much larger than patch j
   b) patch i is much smaller than patch j
   c) patch i is visible from patch j
   d) patch i is not visible from patch j

5) Given any implicit equation, which of the following is true for all (x, y, z) that make the equation exactly zero?
   a) All those points are inside the object defined by the implicit equation
   b) All those points are on the surface of the object defined by the implicit equation
   c) All those points are outside the object defined by the implicit equation
   d) You can't know anything without knowing what the implicit equation is

6) When solving ray-sphere intersections using the implicit equation for a sphere, you must solve the quadratic equation. Which of the following do you know if the B^2-4AC (i.e. the part under the square root) is negative?
   a) The ray intersects the sphere at a negative t... discard this result
   b) The ray intersects the sphere at a positive t... continue to the solution
   c) The ray does not intersect the sphere... discard this result
   d) The ray begins inside the sphere... this is a special case

7) When solving for ray-polygon intersections, after intersecting the ray with a plane, the dominant component of the plane normal is found. this is used to
   a) ignore any component other than the dominant when you project to 2D
   b) ignore the dominant component when you project to 2D
   c) solve the inside-outside test only for that component

8) If solving for inside-outside of a triangle using barycentric coordinates, and you have two barycentric coordinates solved (bc1 = .57, bc2 = .62) which of the following do you know?

   a) The point is outside the triangle
   b) The point is on the boundary of the triangle
   c) The point is inside the triangle
   d) The hit point is on the "back face" of the triangle

9) True or false. The majority of the execution time of a ray tracer is spent in ray-object intersection code.
   a) true
   b) false

10) Snell's law is used to calculate which one of the following rays?
   a) start rays
   b) shadow rays
   c) reflection rays
   d) transmission rays

11) True or false. You might as well recurse on reflection and transmission rays until you hit nothing. This always is bound to happen.
   a) true
   b) false

12) When you hit a surface in ray tracing, generally shadow rays are tested against all objects in a scene. If these rays come back saying they hit an object in the scene, which of the following do you do?
   a) add none of the light from that light source to the object
   b) add only the ambient light from that light source to the object
   c) add all EXCEPT the ambient light from that light source to the object (i.e. diffuse and specular)
   d) add all components (i.e. ambient, diffuse and specular) from that light source to the object.

13) Which of the following Ray Tracing additions works to remove jaggies alone?
   a) multisampling
   b) jittering

14) In the Pixar short "Geri's Game", the character Geri was created using which of the following techniques?
   a) Fractals
   b) Bump mapping
   c) Environment mapping
   d) Catmull-Clark Subdivision Surfaces

15) In the Pixar short "Geri's Game", the trees in the background were created using which of the following techniques?
   a) Fractals
   b) Bump mapping
   c) Environment mapping
   d) Catmull-Clark Subdivision Surfaces

16) In the Pixar short "Geri's Game", Geri's glasses seemed to bend the light as it passed through. Which of the following techniques was used?
   a) Fractals

b) Bump mapping
c) **Environment mapping**
d) Catmull-Clark Subdivision Surfaces

For questions 17-20. Given a triangle with the following vertices, please solve for the equation of the plane it lies on (Ax + By + Cz + D). (Please note that the normal of the plane can go in either of two directions. Only one is offered in the following answers, so if you don't see your answer, try the negative of it! And don't forget to normalize your result.)

v1 = (0, 0, 2*sqrt(3))

v2 = (0, 2*sqrt(3), 0)

v3 = (2*sqrt(3), 0, 0)

17) What is A?
   a) 0
   b) **1/sqrt(3)**
   c) 1/sqrt(2)
   d) 1
18) What is B?
   a) 0
   b) **1/sqrt(3)**
   c) 1/sqrt(2)
   d) 1
19) What is C?
   a) 0
   b) **1/sqrt(3)**
   c) 1/sqrt(2)
   d) 1
20) What is D?
   a) 0
   b) -1
   c) **-2**
   d) -3

LATEST PAPER: 5, Dec 2011

Cases in which boundary fill algorithm no work? 2 marks

Question No: 18

Composite scaling? 2 marks

Question No:19

Define uniform scaling and deferential scaling? 2 marks

Question No: 20

Characteristics of 3D coordinate system? 3 marks

Question No: 21

We have four vectors at points (x1, y1),(x2,y2),(x3,y3) and (x4,y4). Write pseudo code to draw rectangle? 3 Marks

Question No: 22

Write taxonomy of projection? 5 Marks

Question No: 23

Write pseudo code or function in c\c++ which will take Sx, Sy as parameters and scaled points (x1.y1) and (x2, y2) with respect to point (Xf, Yf). 5 Marks