



Virtual University

About Us

CS602  
Solved Final Term Paper 3

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Year  
2017

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

In the Name of Allāh, the Most Gracious, the Most Merciful

### Paper Pattern

MCQS 40 each 1 mark  
Short 4 each 2 marks  
Short 4 each 3 marks  
long 4 each 5 marks

Question No : 1 of 52

Marks: 1 (Budgeted Time 1 Min)

Each hyperbola consists of two -----

Answer ( Please select your correct option )

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Vertices

☐

Nodes

☐

Branches

☐



p 70

Made by: Waqar Siddhu

Question No : 2 of 52

Marks: 1 (Budgeted Time 1 Min)

Computer animation is a form of-----

Answer ( Please select your correct option )

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Colour printer output

☐

Video graphics

☐

CAD/CAM

☐

LCD

☐



Made by: Waqar Siddhu

Question No : 3 of 52

Marks: 1 (Budgeted Time 1 Min)

An independent consortium, the OpenGL Architecture Review Board, guides the OpenGL specification. With broad industry support, OpenGL is the only truly open, vendor-neutral, ----- graphics standard.

Answer ( Please select your correct option )

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☐ Tertiary

☐ Binary

☐ Single platform

☒ Multiplatform

Made by: Waqar Siddhu

Question No : 4 of 52

Marks: 1 (Budgeted Time 1 Min)

All OpenGL applications produce consistent visual display results on any OpenGL API-compliant hardware, ----- of operating system or windowing system.

Answer ( Please select your correct option )

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☒ Regardless

☐ With respect

☐ Kernel

☐ Libraries

Made by: Waqar Siddhu

Question No : 5 of 52

Marks: 1 (Budgeted Time 1 Min)

In order to get a more realistic representation of lighting, we'll need to understand how light passes through a medium and how hitting the boundary layer at the ----- of two media can affect light's properties.

Answer ( Please select your correct option )

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☒ Intersection

☐ Union

☐ Endpoints

☐ Edges

Made by: Waqar Siddhu

Question No : 6 of 52

Marks: 1 (Budgeted Time 1 Min)

Using a lighting model based upon the Blinn Phong model means that we'll always get a uniform specular highlight based upon the colour of the ----- light and material, which means that all reflections based on this model, will be reminiscent of plastic.

Answer ( Please select your correct option )

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☐ Union

☐ Refracting

☐ Intersection

☒ Reflecting

Made by: Waqar Siddhu

Question No : 7 of 52

Marks: 1 (Budgeted Time 1 Min)

The value returned is a unique small integer identifier for the window. The range of allocated identifiers starts at ----- . This window identifier can be used when calling glutSetWindow.

Answer ( Please select your correct option )

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☐ Three

☐ Two

☒ One

☐ Zero

Made by: Waqar Siddhu

Question No : 8 of 52

Marks: 1 (Budgeted Time 1 Min)

----- sets the global idle call back to be 'func' so a GLUT program can perform background processing tasks or continuous animation when window system events are not being received.

Answer ( Please select your correct option )

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☒ glutIdleFunc

☐ glutMainLoop

☐ glutDisplayFunc

☐ glutReshapeFunc

Made by: Waqar Siddhu

Question No : 9 of 52

Marks: 1 (Budgeted Time 1 Min)

A space curve is not confined to a plane. It is free to twist through space. To define a space curve we must use parametric functions that are -----

Answer ( Please select your correct option )

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- ☐ Binary polynomials
- ☐ Mono polynomials
- ☐ Quadratic polynomials
- ☒ Cubic polynomials

Made by: Waqar Siddhu

Question No : 10 of 52

Marks: 1 (Budgeted Time 1 Min)

A point is defined as  $[ax, ay, az, a]^T$  where "a" can be ANY value.

Answer ( Please select your correct option )

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- ☐ True
- ☐ False

Made by: Waqar Siddhu

Question No : 11 of 52

Marks: 1 (Budgeted Time 1 Min)

Given the vector  $[1, 2, 3, 0]^T$  and the point  $[3, 2, 1, 1]^T$ , the equation for the plane defined by them is

Answer ( Please select your correct option )

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- ☐  $1x + 2y + 3z + 10 = 0$
- ☐  $3x + 2y + 1z + 10 = 0$
- ☐  $1x + 2y + 3z - 10 = 0$
- ☐  $3x + 2y + 1z - 10 = 0$

Made by: Waqar Siddhu

Question No : 12 of 52

Marks: 1 (Budgeted Time 1 Min)

Which of the following affine transforms does NOT affect vectors?

Answer ( Please select your correct option )

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☐ Shear

☐ Rotation

☐ Scale

☒ Translation

Made by: Waqar Siddhu

Question No : 13 of 52

Marks: 1 (Budgeted Time 1 Min)

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

Answer ( Please select your correct option )

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☐ None of the given

☐ Non complex

☐ Most complex

☒ More complex

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Question No : 14 of 52

Marks: 1 (Budgeted Time 1 Min)

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.

Answer ( Please select your correct option )

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☐ Neither

☐ Different

☐ Same

☒ None of the given

Made by: Waqar Siddhu

Question No : 15 of 52

Marks: 1 (Budgeted Time 1 Min)

Unless the surface is to be drawn only once, you should probably save the calculated vertex and normal coordinates so that the calculations don't need to be repeated each time that the -----  
- is drawn.

Answer ( Please select your correct option )

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☐ Rectangle

☐ Polygon

☒ Surface

☐ Triangle

Made by: Waqar Siddhu

Question No : 16 of 52

Marks: 1 (Budgeted Time 1 Min)

A recursive ----- technique can be used for other types of surfaces. Typically, the recursion ends either if a certain depth is reached or if some condition on the curvature is satisfied.

Answer ( Please select your correct option )

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☐ None of the given

☐ Addition

☐ Multiplication

☒ Subdivision

Made by: Waqar Siddhu

Question No : 17 of 52

Marks: 1 (Budgeted Time 1 Min)

Fractal are geometric patterns that is repeated at ever smaller scales to produce ----- shapes and surfaces that can not be represented by classical geometry.

Answer ( Please select your correct option )

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☐ None of the given

☐ Linear

☐ Regular

☒ Irregular

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Question No : 18 of 52

Marks: 1 (Budgeted Time 1 Min)

According to Webster's Dictionary a fractal is defined as being "derived from the Latin word ----- meaning broken, various extremely irregular curves or shapes that repeat themselves at any scale on which they are examined."

Answer ( Please select your correct option )

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☐ Fractus



☐ Frectul

☐ Fratus

☐ Fractul

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Question No : 19 of 52

Marks: 1 (Budgeted Time 1 Min)

A correspondence must be established between the transformed coordinates and screen ----- . This is known as a viewport transformation.

Answer ( Please select your correct option )

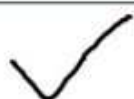
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☐ Edges

☐ Vertices

☐ Coordinates

☐ Pixels



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Question No : 20 of 52

Marks: 1 (Budgeted Time 1 Min)

The transformation process to produce the desired scene for viewing is analogous to taking a photograph with a -----.

Answer ( Please select your correct option )

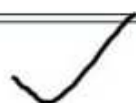
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☐ None of the given

☐ Rendering

☐ Transformation

☐ Camera



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Question No : 21 of 52

Marks: 1 (Budgeted Time 1 Min)

OpenGL applies the projection matrix to yield ----- coordinates. This transformation defines a viewing volume.

Answer ( Please select your correct option )

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☐ Three

☐ Four

☒ Clip

☐ Normal

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Question No : 22 of 52

Marks: 1 (Budgeted Time 1 Min)

----- basic types of projections are provided for us by OpenGL, along with several corresponding commands for describing the relevant parameters in different ways.

Answer ( Please select your correct option )

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☐ Five

☒ Two

☐ Three

☐ Four

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Question No : 23 of 52

Marks: 1 (Budgeted Time 1 Min)

Which of the following describes the purpose of the  $\epsilon$  (epsilon) portion of the rendering equation?

Answer ( Please select your correct option )

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☐ Emitted light from  $p'$  towards  $p$

☐ Intensity of light from  $p'$  to  $p$

☐ Geometry function (0 if  $p'$  not visible from  $p$ , 1/2 otherwise)

☐ Reflection of light from  $p''$  across  $p'$  to  $p$

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Question No : 24 of 52

Marks: 1 (Budgeted Time 1 Min)

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?

Answer ( Please select your correct option )

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☒ 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)

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Question No : 25 of 52

Marks: 1 (Budgeted Time 1 Min)

Plasma-panel Displays use a gas mixture and phosphorus coating for showing display.

Answer ( Please select your correct option )

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☐ False



☒ True

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Question No : 26 of 52

Marks: 1 (Budgeted Time 1 Min)

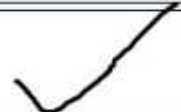
A straight line can be moved to another location by applying \_\_\_\_\_ to each of the line endpoints and redrawing the line between the new coordinates.

Answer ( Please select your correct option )

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☐ Rotation

☒ Translation



☐ Reflection

☐ Scaling factor

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Question No : 27 of 52

Marks: 1 (Budgeted Time 1 Min)

Because clipping against one edge is independent of all others,so it is impossible to arrange the clipping stages in a pipeline.

Answer ( Please select your correct option )

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True

☐

False

☒

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Question No : 28 of 52

Marks: 1 (Budgeted Time 1 Min)

Tomography is the technique used in \_\_\_\_\_.

Answer ( Please select your correct option )

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X-rays photography

☒

Pixel paint

☐

Entertainment

☐

Artis's paintbrush

☐

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Question No : 29 of 52

Marks: 1 (Budgeted Time 1 Min)

In \_\_\_\_\_ algorithm, old color must be read before it is invoked.

Answer ( Please select your correct option )

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Scan line filling

☐

Flood fill

☒

Both scan line and flood fill

☐

None of the given

☐

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Question No : 30 of 52

Marks: 1 (Budgeted Time 1 Min)

In Trivial acceptance/reject test there are four bits of nine regions, Bit3 represents condition \_\_\_\_\_.

Answer ( Please select your correct option )

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☐ Outside half plane of left edge, to the left of left edge  $X < X_{min}$

☒ Outside half plane of right edge, to the right of right edge  $X > X_{max}$

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☐ Outside half plane of bottom edge, below bottom edge  $Y < Y_{min}$

☐ Outside half plane of top edge, above top edge  $Y > Y_{max}$

Made by: Waqar Siddhu

Question No : 31 of 52

Marks: 1 (Budgeted Time 1 Min)

The dot product of two vectors A and B is \_\_\_\_\_, iff the angle between them is less than 90 or greater than 270 degrees.

Answer ( Please select your correct option )

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☒ Greater than zero (0)

☐ Less than zero (0)

☐ Equal to Zero (0)

☐ None of the given

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Question No : 32 of 52

Marks: 1 (Budgeted Time 1 Min)

We want our scene to look more realistic, we should use \_\_\_\_\_ lights.

Answer ( Please select your correct option )

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☐ Point

☐ Parallel

☐ Spot

☒ None of the given

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Question No : 33 of 52

Marks: 1 (Budgeted Time 1 Min)

Lambertian shading was used mostly back when computers weren't fast enough to do \_\_\_\_\_ in real time.

Answer ( Please select your correct option )

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- ☒ Gouraud shading
- ☐ Shading in which triangles painted with single solid color
- ☐ Processing
- ☐ None of the given

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Question No : 34 of 52

Marks: 1 (Budgeted Time 1 Min)

Because clipping against \_\_\_\_\_ edge / edges is independent of all others, it is possible to arrange the clipping stages in a pipeline.

Answer ( Please select your correct option )

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- ☐ Four
- ☒ One
- ☐ Two
- ☐ Three

Made by: Waqar Siddhu

Question No : 35 of 52

Marks: 1 (Budgeted Time 1 Min)

In case of \_\_\_\_\_ , we'll get dull and diffused view.

Answer ( Please select your correct option )

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- ☐ Backscattering
- ☐ Forward scattering
- ☒ Both Backscattering and Forward scattering
- ☐ None of the given

Made by: Waqar Siddhu

Question No : 36 of 52

Marks: 1 (Budgeted Time 1 Min)

A line may have three forms with respect to it's \_\_\_\_\_.

Answer ( Please select your correct option )

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☐ Slop



☐ Plan

☐ Points

☐ None of the given

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Question No : 37 of 52

Marks: 1 (Budgeted Time 1 Min)

We can draw the circle using \_\_\_\_\_.

Answer ( Please select your correct option )

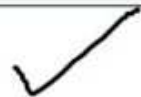
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☐ Pentane

☐ Hexanes

☐ Trident

☐ Octants



Made by: Waqar Siddhu

Question No : 38 of 52

Marks: 1 (Budgeted Time 1 Min)

We maintain the saturation of color values by using

Answer ( Please select your correct option )

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☐ Clamping

☐ Scaling

☐ Shifting

☐ all of the given



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Question No : 39 of 52

Marks: 1 (Budgeted Time 1 Min)

There are various types of transformations as we have seen, in case of 2D transformations, these include:

Answer ( Please select your correct option )

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☐ Scaling☐ Rotation☐ Translation☒ All of the given

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Question No : 40 of 52

Marks: 1 (Budgeted Time 1 Min)

When we perform the rotation about Z-axis

$$x' = x \cos \theta$$

$$y' = y \sin \theta$$

The value of

Answer ( Please select your correct option )

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☐  $\sin \theta$ ☐  $\tan \theta$ ☐  $\cos \theta$ ☒ z

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Question No : 40 of 52

Marks: 1 (Budgeted Time 1 Min)

$$x' = x \cos \theta$$

$$y' = y \sin \theta$$

The value of

$$z' = \underline{\hspace{1cm}}$$

Answer ( Please select your correct option )

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☐  $\sin \theta$ ☐  $\tan \theta$ ☐  $\cos \theta$ ☒ z

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Made by: Waqar Siddhu

Which function is used to change to the size of the *current window* ?

Answer ( [Please click here to Add Answer](#) )

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glutReshapeWindow

Made by: Waqar Siddhu

Give vector equation for a plane curve using second degree polynomial?

Answer ( [Please click here to Add Answer](#) )

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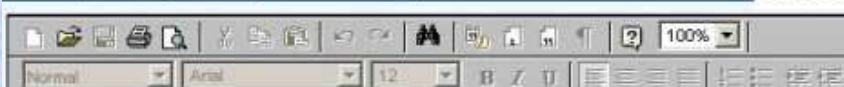
$$P(u) = au^2 + bu + c$$

Made by: Waqar Siddhu

Write down the difference between one-dimensional and two-dimensional evaluator (only for what type of Bezier shape they are useful with)?

Answer ( [Please click here to Add Answer](#) )

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In two dimensions, everything is similar to the one-dimensional case, except that all the commands must take two parameters, u and v, into account. Points, colors, normals, or texture coordinates must be supplied over a surface instead of a curve

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Question No : 44 of 52

Marks: 2 (Budgeted Time 4 Min)

How can we improve rendering efficiency?

Answer ( [Please click here to Add Answer](#) )

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To improve rendering efficiency when dynamically viewing a scene, more or less detailed versions of a model may be swapped in and out of the scene database depending on the importance (usually determined by image size) of the object in the current view.

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Question No : 45 of 52

Marks: 3 (Budgeted Time 6 Min)

Discuss the purpose of OpenGL?

Answer ( [Please click here to Add Answer](#) )

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As a software interface for graphics hardware, OpenGL renders multidimensional objects into a frame buffer. OpenGL is industry-standard graphics software with which programmers can create high-quality still and animated three-dimensional color images.

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Question No : 46 of 52

Marks: 3 (Budgeted Time 6 Min)

```
#define PI 3.14159265
#define EDGES 30
/* draw a circle */
glBegin(GL_LINE_STRIP);

for (i = 0; i <= EDGES; i++)
```

Answer ( [Please click here to Add Answer](#) )

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Made by: Waqar Siddhu

```
glVertex2f(cos((2 *PI*i)/EDGES), sin((2 *PI*i)/EDGES));
```

```
for (i = 0; i <= EDGES; i++)  
    glVertex2f(cos((2 *PI*i)/EDGES), sin((2 *PI*i)/EDGES));  
glEnd();
```

Correct this bad code for constructing a closed surface for two-dimensional example?

Answer ( [Please click here to Add Answer](#) )

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To correct the code, make sure that when  $i == EDGES$ , you use 0 for the sine and cosine, not  $2*PI*EDGES/EDGES$ . (Or simpler still, use `GL_LINE_LOOP` instead of `GL_LINE_STRIP`, and change the loop termination condition to  $i < EDGES$ .)

Made by: Waqar Siddhu

Write down the procedure to use one-dimensional evaluator?

Answer ( [Please click here to Add Answer](#) )

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The one-dimensional target parameter specifies what the control points represent, and therefore how many values need to be supplied in points. The points can represent vertices, RGBA color data, normal vectors, or texture coordinates.

**For example**, with `GL_MAP1_COLOR_4`, the evaluator generates color data along a curve in four-dimensional (RGBA) color space.

Made by: Waqar Siddhu

How does the black and white pictures and color pictures are stored in frame buffer?

Answer ( [Please click here to Add Answer](#) )

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The frame buffer stores information in a two dimensional matrix; If there is black and white picture then there is only one bit required to store '0' for black or 1 for white and in this case buffer will be referred as **bitmap**.

In colour pictures obviously multiple bits are required for each pixel position depending on the possible number of colours in case if multiple bits are used for one pixel frame buffer will be referred as **pixmap**

Made by: Waqar Siddhu

Question No : 49 of 52

Marks: 5 (Budgeted Time 10 Min)

Write down code for making window of size (400,600) and having OpenGL rendering context of rgb, depth and double buffer with window name "Exam Code Window"? (develop this window using OpenGL and glut library in C)

Answer ( Please [click here to Add Answer](#) )

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Question No : 50 of 52

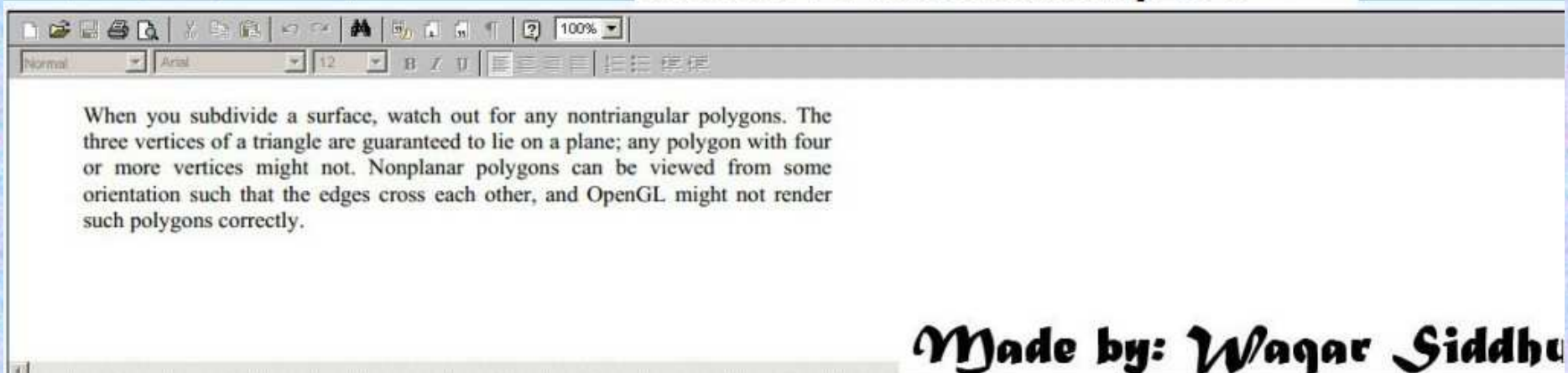
Marks: 5 (Budgeted Time 10 Min)

Explain how recursive subdivision function of triangle helps in improving the polygonal model of surface?

p 345 read

Answer ( Please [click here to Add Answer](#) )

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Question No : 51 of 52

Marks: 5 (Budgeted Time 10 Min)

Which type of light from parallel light, Point light and Spot light you would prefer in your lighting model, in the case,

- a. You have limited computation power
- b. You have no problem of computation power, but you have to make the scene as much realistic as possible

Answer ( Please [click here to Add Answer](#) )

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Made by: Waqar Siddhu

Question No : 52 of 52

Marks: 5 (Budgeted Time 10 Min)

Consider the Digital Differential Analyzer (DDA) Algorithm for drawing a straight line. Two points P1(2,3) and P2(5,6) are given. You are required to run this algorithm for these points to draw a straight line. Also show the values of variables at each step.

DDA\_Line (Point p1, Point p2)

$dx = p2.x - p1.x$

$dy = p2.y - p1.y$

Answer ( [Please click here to Add Answer](#) )

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Question No : 52 of 52

Marks: 5 (Budgeted Time 10 Min)

$dx = p2.x - p1.x$

$dy = p2.y - p1.y$

$x1 = p1.x$

$y1 = p1.y$

if  $|dx| > |dy|$  then

step =  $|dx|$

Answer ( [Please click here to Add Answer](#) )

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Question No : 52 of 52

Marks: 5 (Budgeted Time 10 Min)

if  $|dy| > |dx|$  then

step =  $|dy|$

else

step =  $|dx|$

$xIncrement = dx/step$

$yIncrement = dy/step$

for counter = 1 to step

Answer ( [Please click here to Add Answer](#) )

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```
xincrement = ax/step  
yincrement = dy/step  
for counter = 1 to step  
drawPixel (x1, y1)  
x1 = x1 + xincrement  
y1 = y1 + yincrement
```

Answer ( Please [click here](#) to Add Answer )[WWW.VirtualAcademyLive.com](http://WWW.VirtualAcademyLive.com)