Solved by:	Well Wisher (Sahar)	Class	BSCS 6th Semester
Subject	Cs602 (computer graphics)	Solution Type:	Final Term Paper + Quizez
Institute:	Virtual University of Pakistan		

1. Computer graphics and computer vision are _____ disciplines.

Related

Interrelated

Same

Different

Ref : Computer vision is, in some ways, the inverse of computer graphics. While computer graphics produces image data from 3D models, computer vision often produces 3D models from image data.

http://en.wikipedia.org/wiki/Computer_vision

2. OpenGL has become the industry's most widely used and supported _____ graphics application programming interface (API), bringing thousands of applications to a wide variety of computer platforms.

Dimensional

Dimensional

2 Dimensional and 3-Dimensional

Ref: **http://www.opengl.org/about/**

3. _____ sets the reshape callback for the *current window*.

glutIdle function

glutKeyboardFunc

glutReshapeFunc

glutDisplayFunc

Ref:
https://developer.apple.com/library/mac/documentation/Darwin/Reference/ManPages/man3/glutReshapeFunc.3.html

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

glutIdle function

glutKeyboardFunc

glutReshapeFunc

glutDisplayFunc

Ref: http://www.cs.uccs.edu/~ssemwal/man.html

5. X2/a2 – y2/b2 =1 is an equation of

Hyperbola **Page no : 70**

Parabola

None of given

Ellipse

6. To modify the object shape, shearing transformation cannot be used.

False **Page no : 124**

True

7. Rotation is performed around a fixed point called _____.

Pivot point rotation **Page no : 114**

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

True

False

9. Save a line with both endpoints inside all clipping boundaries.

Trivial Reject

Trivial Accept **Page no : 137**

None of given

10. Dark lights are nothing more than lights in which one or more of the color values are ____.

Unknown

Negative **Page no : 230**

Positive

Zero

11. A series of _____ computer operations convert an object's three-dimensional coordinates to pixel positions on the screen. Transformations, which are represented by matrix multiplication, include modeling, viewing, and projection operations. Such operations include rotation, translation, scaling, reflecting, orthographic projection, and perspective projection.

Three **Page no : 366**

Two

Four

Ten

At a physical surface, our eye's perception of the color depends on the distribution of photon energies that arrive and trigger our _____ cells.

Eye

Retina

Cone **Page no : 393**

12. 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.

Orthographic Parallel Projection

Axonometric Parallel Projection **Page no : 189**

Oblique Parallel Projection

13. 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 **Page no : 234**

Ambient

Diffuse

14. In the Phong Reflection model, _____ light is the same everywhere.

a. **Ambient**
b. Diffuse
c. Specular
d. Emissive
e.

Ref: www.cs.unc.edu/~jwendt/classes/COMP136/quizzes/quiz3Answers.doc

15. A plane is two dimensional since in order to uniquely define any point on its surface we require _____ numbers.

Two

Three

Four

Five

16. In perspective projection, for your view to come out correctly, you will also want the _____ to pass through the middle of the screen.

X axis

Y axis

Z axis **Page no : 195**

None

17. Neither floating-point nor signed integer values are clamped to the range _____ before updating the current color.

0 , -1.0

-1 , 1

1 , -1

0, 1 **Page no : 316**

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

Most complex

Less complex

None of given

More complex **Page no : 333**

19. An object's _____ determine its orientation relative to the light sources. For each vertex, OpenGL uses the assigned normal to determine how much light that particular vertex receives from each light source.

Unit

Normal **Page no : 395**

None of given

20. Which was the most oldest shading model?

a. Flat Shading
b. Phong Shading
c. Gouraud Shading

21. Which of the following affine transforms does NOT affect vectors?

a) Scale
b) Rotation
c) Shear
d) Translation Page no : 113

22) 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 Page no : 189

23) 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 Page no : 189
b) Axonometric Parallel Projection
c) Oblique Parallel Projection

24) 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 Page no : 388
b) GL_PROJECTION

25) 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 Page no : 369

26) 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

27) 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 Page no : 234
b) Diffuse
c) Specular

FINAL TERM PAPER 2010

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

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

- ► **Stop-motion animation** **Page no : 6**
- ► Computer Aided Geometric Design
- ► Video Games
- ► Scientific Visualization

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

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

- ► **False** **Page no : 97**
- ► True

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** **Page no : 423**
- ► 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** **Page no :432**

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

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** **Page no : 288**

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** **Page no : 293**

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** **Page no : 291**

► Unknown

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

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

► **Local** **Page no : 165**

► Static

► Global

► Variable

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

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

► glutMainLoop

► glutIdleFunc

► **glutReshapeFunc** **Page no : 307**

► glutDisplayFunc

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

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

► -1.0

► 0.0

► 2.0

► **1.0** **Page no : 315**

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** **Page no :320**
- ► 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

Ref :
http://www.ualberta.ca/dept/math/gauss/fcm/LinAlg/InRn/SbVctrSpc/OrthgnlLnrlyIndpndnt.htm

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

Ref :
http://books.google.com.pk/books?id=YmQy799flPkC&pg=PA264&lpg=PA264&dq=Bezier+curve+is+numerically+the+----------+of+all+the+polynomial-based+curves+used+in+these+applications.&source=bl&ots=MHnr87FLlQ&sig=wG0oXJ00vxWtEY7RnfNnOXJrc08&hl=en&sa=X&ei=nTroUaDdL6eB4ASioIHgBA&ved=0CCoQ6AEwAA#v=onepage&q=Bezier%20curve%20is%20numerically%20the%20----------

%20of%20all%20the%20polynomial-based%20curves%20used%20in%20these%20applications.&f=false

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
- ► **More complex repeated**

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 ___ direction.

- ► None of the given
- ► Neither
- ► Different
- ► **Same Page no : 340**

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

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

- ► Mosse
- ► **Fern Page no : 350**
- ► 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** **Page no: 366**

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

► **Convex-Hull** **page no : 335**

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** **Page no : 285**

► 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 repeated**

► 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 Color Space 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 page no : 230**

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

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

► Ending lines

► Points

► **Vertices** **Page no : 243**

► 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**

Ref: http://cagd.cs.byu.edu/~557/text/ch2.pdf

Question 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** **Page no : 80**

► 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

Ref: http://groups.csail.mit.edu/graphics/classes/6.837/F98/Lecture8/Slide05.html

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** **Page no : 245**
- ► 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** **Page no : 78**
- ► 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** **Repeated**
- ► 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

► **Simple** **Page no: 291**

► Complex

► Abnormal

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

FINAL TERM QUIZES

1) In class, we discussed three forms of shading for "Utah" graphics. Which was the first to use per vertex normals?

a) Flat Shading

b) Phong Shading

c) Gouraud Shading **Page no : 240**

2) 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 Page no : 205

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

3) 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 **Page no : 265**

d) The ray begins inside the sphere… this is a special case

4)

_____ 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.
Select correct option:

glutIdleFunc
glutMainLoop
glutDisplayFunc
glutReshapeFunc

Ref: http://www.opengl.org/resources/libraries/glut/spec3/node63.html

5)

A space curve can be confined to a plane.
Select correct option:

True
False Page no : 326

6)

A tangent vector certainly defines the slope at one end of the curve, but a vector has characteristics of.....
Select correct option:

direction
magnitude
both direction and magnitude Page no : 331
None of the given

7)

We allow the parametric variable to take on values only in the interval ----------.
Select correct option:

-1 <= u <= 0
0 <= u <= 2
0 <= u <= 1 Page no : 321
-1 <= u <= 1

8)

The degree of a Bezier curve is equal to n-1, where n is the number of control points
Select correct option:

Yes **Page no : 334**
No

9)

Brenstien polynomial functions are the basic functions of _____ curves.
Select correct option:

NURBS
Bezier **Page no : 337**
Both NURBS and Bazier
None of the given

10)

A parametric curve is one whose defining equations are given in terms of a ----------, common, independent variable called the parametric variable.
Select correct option:

Triple
Double
Single **Page no : 320**
None of the given

11)

Bit mask to select a window with multisampling support. If multisampling is not available, a ---------- window will automatically be chosen.
Select correct option:

Non-multisampling **Page no : 305**
Multisampling
Mono-multisampling
Di-multisampling

12)

Bezier curve is tangent to the lines connecting _____.
Select correct option:

First two points
Last two points
Fist two points and last two point
None of the given

13)

OpenGL is well structured with an intuitive design and logical commands. Efficient OpenGL routines typically result in applications with fewer lines of code than those that make up programs generated using other graphics libraries or packages. In addition, OpenGL drivers ---------- information about the underlying hardware, freeing the application developer from having to design for specific hardware features.
Select correct option:

Encapsulate Page no : 297
Shows
Hibernates
None of the given

14)

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 ----------.
Select correct option:

Binary polynomials
Mono polynomials
Quadratic polynomials
Cubic polynomials Page no : 326

15)

End points and an intermediate point on the curve, then we now ---------- quantities that we can express in terms of these coefficients (3 points x 3 coordinates each), and we can use these three points to define a unique curve.
Select correct option:

Six
Three
Two
Nine Page no : 321

16)

To convert the information in the A matrix into that required for the P matrix, we do some simple matrix algebra, First we have UA=UNP then Simply A = ----------
Select correct option:

UP
NP
UN
None of the given

17)

If we assign a different value to the parametric variable for the intermediate point, then we obtain different values for the coefficients. This, in turn, means that a different curve is produced, although it passes through the ---------- three points.
Select correct option:

Isolate
Different
Same **Page no : 323**
None of the given

16)

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.
Select correct option:

Intersection **Page no : 295**
Union
Endpoints
Edges

17)

To ensure a smooth transition from one section of a piecewise _____ to the next, we can impose various continuity conditions at the connection points
Select correct option:

non parametric curve
parametric curve
polygon vector
Non of the these

Ref : www.mrl.snu.ac.kr/courses/CourseGraphics/Splines.ppt

18)

Bezier curve can represent the more complex piecewise _____ curve.
Select correct option:

Polynomial **Page no : 33**
Exponential
Cubic
None of above

19)

Curve and surface equations can be expressed in either a parametric or a non parametric form.
Select correct option:
True
False **Page no : 333**

20)

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.
Select correct option:
Union
Refracting **Page no : 291**
Intersection
Reflecting

21)

If the current matrix (according to glMatrixMode) is multiplied by the translation matrix, with the product replacing the current matrix. That is, if M is the current matrix and T is the translation matrix, then M is replaced with ----------.
Select correct option:
M-T

M+T
M/T
M*T

22)

With similar expressions for y(u) and z(u). Again the a, b, c and d terms are constant coefficients. As we did with Equation for a plane curve, we combine the x(u), y(u) , and z(u) expressions into a single vector equation P(u) = ----------.
Select correct option:
Au2+bu1+cu+d
Au4+bu3+cu2+d1
Au3+bu2+cu2+d
Au3+bu2+cu+d Page no : 326

23)

The matrix generated by gluPerspective is multiplied by the current matrix, just as if glMultMatrix were called with the generated matrix. To load the perspective matrix onto the current matrix stack instead, precede the call to gluPerspective with a call to ----------.
Select correct option:
glRotated
gluPerspective
glTranslated
glLoadIdentity Page no : 313

24)

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

- **Element Page no : 101**
- Variable
- Value
- Component

25)

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**

26)

Shadow mask methods can display a _____ range of colors.

- Small
- **Wide** **Page no : 29**
- Random
- Crazy

27)

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

- **True**
- False

28)

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** **Page no : 26**
- Electron