Department of Computer Science
Class: T.Y.B.Sc.(CS)
Semester: V
Subject: Game Programming
Sample Questions

MULTIPLE CHOICE QUESTIONS

1) On the Cartesian plane, the x-axis is also known as
   a. horizontal axis
   b. vertical axis
   c. point coordinate
   d. function coordinate
2) What quadrant is (-2,1) in?
   a. IV
   b. III
   c. II
   d. I
3) A circle is a _____ _____ curve, every point on which is equidistant from a given fixed point.
   a. Closed
   b. Open
   c. Single
   d. Double
4) The vector product of two vector is also known as.
   a. Scalar Product
   b. Dot product
   c. Point Product
   d. Cross Product
5) Cross product of two same vectors is equal to
   a. 0
   b. 1
   c. J
   d. j.j
6) What is the magnitude of the vector, 12i – 8j – 24k?
   a. 18
   b. 28
   c. 38
   d. 48
7) For two vectors A and B, what is A.B (if they have angle α between them)?
   a. |A||B| cosα
   b. |A||B|

c. $\sqrt{(|A||B|)}\cos\alpha$
d. $|A||B|\sin\alpha$

8) What is Distributive law?
a. A.B =B.A
b. a(A.B) = A.(aB)
c. A.(B+D) = (A.B) + (A.D)
d. a(A.B) = AxB

9) Mathematically, for two vectors A and B of any magnitude, the cross product of both, i.e.AxB = given by:
a. $|A||B|\sin Ø$
b. $|A||B|$
c. $|A||B|\cos Ø$
d. $|A||B|\sin(180°+Ø)$

10) Which of them is not correct?
a. j x j = 0
b. j x k = i
c. j x i = k
d. j x i = -k

11) The radiant efficiency of the luminous source depends on
a. The shape of the source
b. The temperature of the source
c. The wavelength of the light rays
d. All of the above

12) The unit of luminous flux is.
a. Steradian
b. Candela
c. Lumen
d. Lux

13) The method which is based on the principle of checking the visibility point at each pixel position on the projection plane are called
a. Object-space method
b. Image-space method
c. Both A & B
d. Pixel-space Method

14) Back Face Detection is.
a. Identifying the back face of a polyhedron
b. Comparing Surface depths at each pixel position.
c. All polygon surface intersecting the scan line are examined
d. Surfaces are scan converted in order , starting with the surface of greatest depth.

15) In 2D-translation, a point (x, y) can move to the new position (x', y') by using the equation.
   a. x'=x+dx and y'=y+dx
   b. x'=x+dx and y'=y+dy
   c. X'=x+dy and Y'=y+dx
   d. X'=x-dx and y'=y-dy
16) Positive values for the rotation angle Θ defines
   a. Counterclockwise rotations about the end points
   b. Counterclockwise translation about the pivot point
   c. Counterclockwise rotations about the pivot point
   d. Negative direction
17) The original coordinates of the point in polor coordinates are
   a. X'=r cos (Φ +Θ) and Y'=r cos (Φ +Θ)
   b. X'=r cos (Φ +Θ) and Y'=r sin (Φ +Θ)
   c. X'=r cos (Φ -Θ) and Y'=r cos (Φ -Θ)
   d. X'=r cos (Φ +Θ) and Y'=r sin (Φ -Θ)
18) If the scaling factors values sx and sy< 1 then
   a. It reduces the size of object
   b. It increases the size of object
   c. It stunts the shape of an object
   d. It stunts the pixel of an object
19) Which transformation needs homogeneous coordinates to represent it in Matrix from?
   a. Scaling
   b. Rotation
   c. Translation
   d. Reflection
20) A matrix B and _____ will have the same determinant.
   a. Its transpose
   b. Its inverse
   c. Its echelon matrix
   d. Its adjoint
21) The correct determinant value for the determinant $\begin{vmatrix} 7 & 8 \\ 5 & 2 \end{vmatrix}$ would be
   a. (7)(5)-(8)(2)
   b. (7)(2)+(5)(8)
   c. (7)(2)+(8)(5)
   d. (7)(2)-(5)(8)
22) In perspective projection, all lines of sight start at a _____ point.
   a. Double
   b. Triple

c. Multiple
d. Single

23) It is a vertical projection plane used to obtain the object's Perspective is _____

a. Orthographic plane
b. Vertical plane
c. Perspective picture plane
d. Horizontal plane

24) Interpolation is done by

a. Curve fitting
b. Regression analysis
c. Curve fitting & Regression analysis
d. None of the mentioned

25) What is a GPU?

a. Grouped Processing Unit
b. Graphics Processing Unit
c. Graphical Performance Utility
d. Graphical Portable Unit

26) In graphical system, the array of pixels in the picture are stored in

a. Memory
b. Frame buffer
c. Processor
d. Ram

27) What is a VA or VAO

a. Vector Array Object
b. Vertex Automation Output
c. Vertex Array Object
d. Vector Array Output

28) What does Open GLSL stand for?

a. Graphical Library of Shader Languages
b. Geographic Land and Survey Library
c. Graphics Library Shader Language
d. Graphical Language and Shading Library

29) OpenGL stands for.

a. Open General Liability
b. Open Graphics Library
c. Open Guide Line
d. Open Graphics Layer

30) In OpenGL, what is a "stencil buffer"?

a. The act of swapping buffers done natively on the hardware

b. A low-resource buffer used for accumulating fragments from rendering to “cut out” another accumulated render
c. A high-bandwidth buffer used for fragmenting images into accumulation buffers
d. A special type of buffer used only to draw text

31) What is swap chain ?
a. A collection of buffers that are used for displaying frames to the user
b. A collection of pointers that are used for displaying graphics to the user
c. A collection of frames that are used for displaying buffer to the user
d. A collection of images that are used for displaying frames to the user

32) A process with the help of which images or picture can be produced in a more realistic way is called.
a. Fractal
b. Defined Sequence
c. Quad-tree
d. Rendering

33) A polygon is constructed from a sequence of.
a. Line
b. Vertex
c. Coordinates
d. Angle

34) An n-dimensional vector V can be written as
a. V=(v1,v2,v3,…….,vn)
b. V=(vn,v2,v3,…….,vn)
c. V=(vn-1,v2,v3,…….,vn)
d. V=(vn)

35) The area of a polygonal shape is readily calculated from its chain of coordinates
a. =1/3[(x0y1 −x1y0)+(x1y2 −x2y1)+(x2y3 −x3y2)+(x3y0 −x0y3)]
b. =1/2[(x0y1 −x1y0)+(x1y2 −x2y1)+(x2y3 −x3y2)+(x3y0 −x0y3)]
c. =1/2[(x1y1 –x0y0)+(x1y2 −x2y1)+(x2y3 −x3y2)+(x3y0 −x0y3)]
d. =1/2[(x0y1 −x1y0)+(x1y2 −x2y1)+(x2y3 −x3y2)+(x0y0 −x0y0)]

36) Thesimplest3Dpolygonisatriangle,whichisalways
a. linear
b. circular
c. Planar
d. rectangular

37) Euler’s rule specify nice relationship between vertices, edges and the faces of a 3D polygonal object.
a. faces+ vertices = edges -2
b. faces+ vertices = edges +2
c. faces- vertices = edges +2

d. faces- vertices = edges -2

38) 3D vector r with its head, tail, components and magnitude annotated. The components and magnitude are given by.
   a. $\Delta x = (xh * xt)$
   b. $\Delta x = (xh + xt)$
   c. $\Delta x = (xh - xt)$
   d. $\Delta x = (xh / xt)$

39) Converting a vector into a unit form is called .
   a. Normalizing
   b. Vectorization
   c. Rendering
   d. Rastorization

40) By employing the rules of vector addition and subtraction, we can compose a vector r by adding three Cartesian vectors as follows:
   a. r = ai + bj - ck
   b. r = ai - bj + ck
   c. r = ai – bj - ck
   d. r = ai+ bj+ ck

41) Vector multiplication provides some powerful ways of computing angles and _____
   a. Surface Fractal
   b. Surface Orientation
   c. Surface Planar
   d. Surface Fraction

42) The scalar product of two vectors is written
   a. $s \cdot r = ||s|| + ||r|| \cos(\beta)$
   b. $s \cdot r = ||s|| - ||r|| \cos(\beta)$
   c. $s \cdot r = ||s|| \cdot ||r|| \cos(\beta)$
   d. $s \cdot r = ||s|| * ||r|| \cos(\beta)$

43) Lambert's law states that the intensity of illumination on a diffuse surface is proportional to the cosine of the angle between the surface normal vector and the _____
   a. Light Source Direction
   b. Normal Vector Direction
   c. Vector Direction
   d. Viewing Angle

44) If this angle is less than 90◦ the polygon is _____
   a. Invisible
   b. Partial Visible
   c. Visible
   d. None of these

45) Two vectors r and s can be multiplied together to produce a third vector t: $r \times s = t$ where .

a. $||t||=||r||\cdot||s||\cos(\beta)$
b. $||t||=||r||\cdot||s||\sin(\beta)$
c. $||t||=||r||+||s||\sin(\beta)$
d. $||t||=||r||+||s||\cos(\beta)$

46) Using the definition for the cross product, operations such as $(i\times i)$, $(j\times j)$and $(k \times k)$ result in a vector whose magnitude is ____
a. 1
b. -1
c. 2
d. 0

47) The right-hand rule is an aide m´emoire for working out the orientation of the ____
a. Scalar Product Vector
b. Cross Product Vector
c. Magnitude of vector
d. Dot Product vector

48) Two 2D vectors , r and s ,The height $h=||s||\sin(\beta)$, therefore the area of the parallelogram is
a. $||r||s =||r||\cdot||s||\sin(\beta)$
b. $||r||h =||r||\cdot||s||\cos(\beta)$
c. $||r||r =||r||\cdot||s||\sin(\beta)$
d. $||r||h =||r||\cdot||s||\sin(\beta)$

49) The area of the triangle formed by the vectors r and s is half the magnitude of their.
a. Cross Product
b. Dot Product
c. Scalar Product
d. Vector Product

50) The determinant of a 2×2 matrix is a scalar quantity computed, its determinant is
a. adb– cb
b. bd – cb
c. ad – cb
d. ad – ca

51) Roll is the angle of rotation about the ___
a. z-axis
b. y-axis
c. x-axis
d. no-axis

52) If the X’- andY’ -axes are assumed to be unit vectors their direction cosines form the elements of the____

a. Translation Matrix
b. Scaling Matrix
c. Rotation Matrix
d. Reflection Matrix

53) Image space is a projection – normally perspective – of the camera space onto an_____
a. Image Plane
b. Arbitrary Plane
c. Orthogonal plane
d. Vector Plane

54) A 3D unit vector has three components $[xyz\ ]^T$, which are equal to the cosines of the angles formed between the vector and the three _____
a. Bipolar Axes
b. Polar Axes
c. Orthogonal Axes
d. Diagonal Axes

55) A quaternion q is a quadruple of real numbers and is defined as.
a. q =[s,v]
b. q =(s,v)
c. q ={s,v}
d. q =|s,v|

56) A vertex can then be represented in quaternion form by its equivalent position vector and a zero scalar term. For example, a point P(x, y, z) is represented in quaternion form by
a. p = [1+xi+ yj+ zk]
b. p = [1+xi- yj+ zk]
c. p = [0+xi - yj+ zk]
d. p = [0+xi+ yj+ zk]

57) Quaternions can be multiplied together to create a single quaternion representing a compound rotation by___
a. $q = q_{yaw}q_{pitch}q_{roll}$=[s - xi+ yj+ zk]
b. $q = q_{yaw}q_{pitch}q_{roll}$=[s + xi+ yj+ zk]
c. $q = q_{yaw}q_{pitch}q_{roll}$=[s - xi+ yj - zk]
d. $q = q_{yaw}q_{pitch}q_{roll}$=[s + xi - yj+ zk]

58) . If β varies between 0 and π/2, cos2(β) varies between 1 and 0, and sin2(β) varies between 0 and 1, which can be used to modify the two interpolated values n1 and n2 as follows
a. n = n1 cos2(t) - n2 sin2(t)
b. n = n1 sin2(t) + n2 cos2(t)
c. n = n1 sin2(t) - n2 sin2(t)
d. n = n1 cos2(t) + n2 sin2(t)

59) A cubic polynomial will form the basis of the interpolant.
   a. $V1 = at^3 + bt^2 – ct + d$
   b. $V1 = at^3 + bt^2 + ct + d$
   c. $V1 = at^3 + bt^2 + ct - d$
   d. $V1 = at^3 - bt^2 + ct+ d$
60) When interpolating vectors, θ is the angle between the two vectors. If this is not known, it can be derived using the dot product formula
   a. $Cos(\Theta) = V_1.V_2 * ||V_1|| \, ||V_2||$
   b. $Sin(\Theta) = V_1.V_2 / ||V_1|| \, ||V_2||$
   c. $Cos(\Theta) = V_1.V_2 / ||V_1|| \, ||V_2||$
   d. $Cos(\Theta) = V_1.V_2 + ||V_1|| \, ||V_2||$
61) The well-known equation of a line is_____
   a. y = mx + c
   b. y = mx - c
   c. y = mx / c
   d. y = mx * c
62) There is an intimate relationship between the sin and cos definitions, and they are formally related by .
   a. $\cos(\beta) = \sin(\beta - 90^\circ)$
   b. $\sin(\beta) = \sin(\beta + 90^\circ)$
   c. $\cos(\beta) = \sin(\beta + 90^\circ)$
   d. $\sin(\beta) = \sin(\beta - 90^\circ)$
63) The sine rule relates angles and side lengths for a triangle labeled such that side a is opposite angle A, side b is opposite angle B, etc. The sine rule states
   a. a / sinA = b / sinC = c / sinB
   b. a / sinA = b / sinB = c / sinC
   c. a / sinC = b / sinA = c / sinB
   d. b / sinA = a / sinB = c / sinC
64) Two sets of compound trigonometric relationships show how to add and subtract two different angles and multiples of the same angle. The following are some of the most common relationships.
   a. sin(A±B) = cos(A)cos(B)±sin(A)sin(B)
   b. cos(A±B) = sin(A)cos(B)±cos(A)sin(B)
   c. sin(A±B) = sin(A)cos(B)±cos(A)sin(B)
   d. cos(A±B) = cosA)sin(B)±sin(A)cos(B)
65) The relationships that integrate angles with the perimeter of a triangle.
   a. S =1 / 2(a + b + c)
   b. S =1 / 2(a - b - c)
   c. S =1 / 2(a + b - c)
   d. S =1 / 2(a - b + c)

66) To interpolate linearly between two values V0 and V1, we use the following interpolant
   A. V(t)=V0(1+t)-V1t for 0≤ t ≤1
   B. V(t)=V0(1−t)-V1t for 0≤ t ≤1
   C. V(t)=V0(1+t)+V1t for 0≤ t ≤1
   D. V(t)=V0(1−t)+V1t for 0≤ t ≤1
67) A B-spline is constructed from a string of curve segments whose geometry is determined by a group of local control points. These curves are known as ___
   a. Inverse polynomials
   b. Piecewise polynomials
   c. Integrated polynomials
   d. Projected polynomials
68) Intersecting lines and parallel lines that give rise Second intercept theorem .
   a. a / b = c / d
   b. a / d = c / b
   c. b / a = d / c
   d. d / c = b / a
69) When all three medians are drawn, they intersect at a common point, which is also the triangle's.
   a. Center of triangle
   b. Center of diagonal
   c. Center of Gravity
   d. Center of object
70) An equilateral triangle has three equal sides of length l and equal angles of 60◦. The triangle's altitude is.
   a. h = √3 / 2 / 1
   b. h = √3 / 2 * 1
   c. h = √2 / 3 * 1
   d. h = √2 / 3 / 1
71) A right trianglewithitsobligatoryright angle. The triangle's area is
   a. A = 1 / 2 * a / b
   b. A = 1 / 2 * a - b
   c. A = 1 / 2 * a + b
   d. A = 1 / 2 * a * b
72) Quadrilaterals are those whose interior angles sum to _____
   a. 180
   b. 90
   c. 270
   d. 360
73) A parallelogram is formed from two pairs of intersecting parallel lines, so it has equal opposite sides and equal opposite angles. The altitude of parallelogram is given as.

a. $h = b \cdot \cot\alpha$
b. $h = b \cdot \tan\alpha$
c. $h = b \cdot \sin\alpha$
d. $h = b \cdot \cos\alpha$

74) A rhombus, which is a parallelogram with four sides of equal length its area is given by
a. $A = a^2 \sin(\alpha)$
b. $A = a^2 \cos(\alpha)$
c. $A = a^2 \tan(\alpha)$
d. $A = a^2 \cot(\alpha)$

75) The general form of the equation of a plane is expressed as .
a. $Ax - By + Cz + D = 0$
b. $Ax + By - Cz + D = 0$
c. $Ax + By + Cz + D = 0$
d. $Ax - By + Cz - D = 0$

76) COM is abbreviated as .
a. Common object model
b. Component object model
c. Cartisian object model
d. Curve object model

77) One use for 2D textures is to store ____
a. 2D Pixel Data
b. 2D Coordinate data
c. 2D Object Data
d. 2D Image Data

78) Each element in the texture stores the ____ of a pixel
a. Intensity
b. Position
c. Color
d. Shades

79) To avoid flickering in animation, it is best to draw an entire frame of animation into an off screen texture called .
a. Front Buffer
b. Back Buffer
c. Memory Buffer
d. Virtual Buffer

80) Swapping the roles of the back and front buffers is called
a. Presenting
b. Displaying
c. Representing
d. Redirecting

81) More than two buffers can be employed; using three buffers is called.
   a. Tri Buffering
   b. 3 Buffering
   c. Triple Buffering
   d. Third Buffering
82) There is a one-to-one correspondence between each element in the depth buffer and each pixel in the.
   a. Front Buffer
   b. Back Buffer
   c. Right Buffer
   d. Left Buffer
83) To handle the depth problem, one might suggest drawing the objects in the scene in the order of.
   a. Nearest to Farthest
   b. Nearest to Nearest
   c. Farthest to Farthest
   d. Farthest to Nearest
84) In order for Direct3D to determine which pixels of an object are in front of another, it uses a technique called.
   a. Front Buffer
   b. Back Buffer
   c. Z-Buffer
   d. B-Buffer
85) The technique making the back buffer and depth buffer 4X bigger than the screen resolution is called.
   a. Multisampling
   b. Supersampling
   c. Smoothsampling
   d. Mixedsampling
86) The number of quality levels for the given combination will be returned through.
   a. PNumQualityLevels
   b. PnumQualityLevels
   c. pNumqualityLevels
   d. pNumQualityLevels
87) Which structure needs to be filled out for both the swap chain buffers and the depth buffer.
   a. DXGI_SAMPLE_DES
   b. DXGI_SAMPLE_DESC
   c. DXG_SAMPLE_DESC
   d. DXGI_SAMPLE_DESCD

88) The application would check feature level support from newest to oldest
   a. Oldest to Newest
   b. Oldest to Oldest
   c. Newest to Oldest
   d. Newest to Newest
89) Display adapter we want the create device to represent specify by.
   a. pAdapter
   b. Padapter
   c. pADAPTER
   d. PAdap
90) Creates a software driver used to emulate 3D hardware we can use.
   a. 2D_DRIVER_TYPE_SOFTWARE
   b. 3D_DRIVER_TYPE_SOFTWARE
   c. 2D_Driver_Type_Software
   d. 3D_Driver_Type_Software
91) To create the render target view, we use ____ .
   a. ID3D11Device::createrendertargetview method
   b. ID2D11Device::CreateRenderTargetView
   c. ID2D11Device::createrendertargetview
   d. ID3D11Device::CreateRenderTargetView
92) We like to draw the 3D scene to the entire back buffer. However, sometimes we only want to draw the 3D scene into a subrectangle of the back buffer, The subrectangle of the back buffer we draw into is called the ____ .
   a. View
   b. Window
   c. Viewport
   d. Windowport
93) Frame Statistics is common for games and graphics applications to measure the number of ___ .
   a. Frames being rendered per second
   b. Image being rendered per second
   c. Frame being process per second
   d. Image being process per second
94) _____ formats are used to reserve memory & then specify how to reinterpret the data at a later time when the texture is bound to the pipeline.
   a. TYPE
   b. SINT
   c. UNORM
   d. TYPELESS

95) ____ techniques works by making the back buffer & depth buffer 4X bigger than the screen resolution.

a. Sampling
b. Supersampling
c. Subsampling
d. Multisampling

96) ____ stage reads geometric data from memory & uses it to assemble geometric primitives.

a. Vertex shader stage
b. Tessellator stage
c. Output merger stage
d. Input assembler stage

97) A ____ is a unit vector that describes the direction a polygon is facing.

a. Unit normal
b. Face normal
c. Surface normal
d. Normal vectors.

98) A____ is a unit vector that is orthogonal to the tangent plane of a point on a surface.

a. Unit normal
b. Face normal
c. Surface normal
d. Normal vectors.

99) Interpolating the normal & doing lighting calculations per pixel is called ____.

a. Pixel lighting
b. Vertex normal
c. Vertex lighting
d. surface normal

100) When light strikes a point on a surface, the light rays get scatter in various random directions this is called a _____ reflection.

a. Ambient
b. Specular
c. Parallel
d. Diffuse