بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِيْمِ

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)

Computer animation is a form of----------

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Answer (Please select your correct option)

- Colour printer output
- Video graphics ✓
- CAD/CAM
- LCD

Made by: Waqar Siddhu

Question No : 2 of 52 — Marks: 1 (Budgeted Time 1 Min)

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

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Answer (Please select your correct option)

- Low animation
- High resolution
- Full animation
- Limited animation ✓

Made by: Waqar Siddhu

Question No : 3 of 52 **Marks: 1 (Budgeted Time 1 Min)**

OpenGL is built for compatibility across hardware and operating systems. This architecture makes it easy to port OpenGL programs from one system to another. While each operating system has ---------- requirements.

Answer (Please select your correct option)

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- Compatibility
- Same
- Unique ✓
- None of the given

Made by: Waqar Siddhu

Question No : 4 of 52 **Marks: 1 (Budgeted Time 1 Min)**

Coordinate systems are the measured frames of reference within which geometry is defined, manipulated and viewed.

Answer (Please select your correct option)

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- True ✓
- False

Made by: Waqar Siddhu

Question No : 5 of 52 **Marks: 1 (Budgeted Time 1 Min)**

glutReshapeWindow requests a change in the size of the *current window*. The width and height parameters are size extents in pixels. The width and height must be ---------- values.

Answer (Please select your correct option)

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- Non of the given
- Neutral
- Negative
- Positive ✓

Made by: Waqar Siddhu

Question No : 6 of 52 Marks: 1 (Budgeted Time 1 Min)

The glClearColor function specifies the red, green, blue, and alpha values used by glClear to clear the color buffers. Values specified by glClearColor are clamped to the range ----------.

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Answer (Please select your correct option)

- [0,-1]
- [-1,1]
- [.5,1]
- [0,1]

Made by: Waqar Siddhu

Question No : 7 of 52 Marks: 1 (Budgeted Time 1 Min)

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.

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Answer (Please select your correct option)

- None of the given
- Isolate
- Different
- Same

Made by: Waqar Siddhu

Question No : 8 of 52 Marks: 1 (Budgeted Time 1 Min)

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

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Answer (Please select your correct option)

- Non Universal Rational Binary Spline
- Non Uniform Rational Binary Splines
- Non Uniform Rational Beta Splines
- Non Universal Rational Beta Splines

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Question No : 9 of 52 Marks: 1 (Budgeted Time 1 Min)

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

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Answer (Please select your correct option)

- True
- False

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Question No : 10 of 52 Marks: 1 (Budgeted Time 1 Min)

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

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Answer (Please select your correct option)

- 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

Made by: Waqar Siddhu

Question No : 11 of 52 Marks: 1 (Budgeted Time 1 Min)

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

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Answer (Please select your correct option)

- None of the given
- Non complex
- Most complex
- More complex

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Question No : 12 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.

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Answer (Please select your correct option)

- None of the given ✓
- Neither
- Different
- Same

Made by: Waqar Siddhu

Question No : 13 of 52 Marks: 1 (Budgeted Time 1 Min)

For high-quality images, it's a good idea to subdivide more on the silhouette edges than in the interior. If the surface is to be rotated relative to the eye, this is tougher to do, since the silhouette edges keep moving. Silhouette edges occur where the ---------- are perpendicular to the vector from the surface to the viewpoint.

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Answer (Please select your correct option)

- None of the given
- Unit vectors
- Tangent vectors
- Normal vectors ✓

Made by: Waqar Siddhu

Question No : 14 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 an scale on which they are examined."

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Answer (Please select your correct option)

- Fractus ✓
- Frectul
- Fratus
- Fractul

Made by: Waqar Siddhu

Question No : 15 of 52 Marks: 1 (Budgeted Time 1 Min)

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

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Answer (Please select your correct option)

- None of the given
- Thohar
- Mosse
- Fern

Made by: Waqar Siddhu

Question No : 16 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 ----------.

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Answer (Please select your correct option)

- None of the given
- Rendering
- Transformation
- Camera ✓

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Question No : 17 of 52 Marks: 1 (Budgeted Time 1 Min)

The viewing and modeling transformations are combined to form the ---------- matrix, which is applied to the incoming object coordinates to yield eye coordinates.

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Answer (Please select your correct option)

- Two
- Square
- Viewport
- Modelview ✓

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Question No : 18 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.

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Answer (Please select your correct option)

- Five
- Two ✓
- Three
- Four

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Question No : 19 of 52 Marks: 1 (Budgeted Time 1 Min)

At a physical surface, our eye's perception of the colour depends on the distribution of photon energies that arrive and trigger our ---------- cells. Those photons come from a light source or combination of sources, some of which are absorbed and some are reflected by the surface.

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Answer (Please select your correct option)

- Lens
- Eye
- Cone ✓
- Retina

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Question No : 20 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?

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Answer (Please select your correct option)

- 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 : 21 of 52 Marks: 1 (Budgeted Time 1 Min)

When obtaining normals for a triangle, which of the following mathematical constructs is NOT used?

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Answer (Please select your correct option)

- Point-Point subtraction
- Vector normalization
- Vector cross products
- Vector dot products

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Question No : 22 of 52 Marks: 1 (Budgeted Time 1 Min)

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

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Answer (Please select your correct option)

- Unknown
- Negative ✓
- Null
- Positive

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Question No : 23 of 52 Marks: 1 (Budgeted Time 1 Min)

The traditional approach in real-time computer graphics has been to calculate lighting at a vertex as a sum of the _____ light.

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Answer (Please select your correct option)

- Diffuse, and specular
- Ambient
- Ambient, diffuse, and specular
- Specular ✓

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Question No : 24 of 52 Marks: 1 (Budgeted Time 1 Min)

Unlike ambient light, the intensity of diffuse light is directional and is a function of the angle of the incoming light and the surface. This type of shading is called Lambertian shading after Lambert _____law.

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Answer (Please select your correct option)

- Perpendicular
- Cosine ✓
- Sine
- Tangent

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Question No : 25 of 52 Marks: 1 (Budgeted Time 1 Min)

There are _____ basic types of polygon.

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Answer (Please select your correct option)

- 2
- 3 ✓
- 4
- 10

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Question No : 26 of 52 Marks: 1 (Budgeted Time 1 Min)

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

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Answer (Please select your correct option)

- Complex ✓
- None of the given
- Hybrid
- Convex

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Question No : 27 of 52 Marks: 1 (Budgeted Time 1 Min)

The boundary-fill method requires the coordinates of _____.

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Answer (Please select your correct option)

- Starting point
- Filling colour
- Boundary colour
- All of the given

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Question No : 28 of 52 Marks: 1 (Budgeted Time 1 Min)

A polygon is usually defined by a sequence of vertices and _____. (Choose best suitable option)

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Answer (Please select your correct option)

- Ending lines
- Edges
- Circles
- None of the given

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Question No : 29 of 52 Marks: 1 (Budgeted Time 1 Min)

A three-dimensional reflection can be performed relative to a selected reflection _____.

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Answer (Please select your correct option)

- None of the given
- Plane
- Axis
- Both Axis and plane

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Question No : 30 of 52 Marks: 1 (Budgeted Time 1 Min)

_____ transformation produces shape distortions as if objects were composed of layers that are caused to slide over each other.

Answer (Please select your correct option)

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- Translation
- Reflection
- Shear ✓
- Rotation

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Question No : 31 of 52 Marks: 1 (Budgeted Time 1 Min)

The_____ technique has the direction of projection perpendicular to the viewing plane, but the viewing direction is NOT perpendicular to one of the principle faces.

Answer (Please select your correct option)

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- Oblique Parallel Projection
- Axonometric Parallel Projection ✓
- Orthographic Parallel Projection
- 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)

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

p 294

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 : 35 of 52 Marks: 1 (Budgeted Time 1 Min)

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).

Answer (Please select your correct option)

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- Unknown
- Simple ✓
- Complex
- Abnormal

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Question No : 36 of 52 Marks: 1 (Budgeted Time 1 Min)

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

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Answer (Please select your correct option)

- Slop
- Plan
- Points
- None of the given

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Question No : 37 of 52 Marks: 1 (Budgeted Time 1 Min)

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

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Answer (Please select your correct option)

- Reduced
- Enlarged
- Remain same
- None of the given

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Question No : 38 of 52 Marks: 1 (Budgeted Time 1 Min)

We maintain the saturation of color values by using

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Answer (Please select your correct option)

- 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:

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Answer (Please select your correct option)

- Scaling
- Rotation
- Translation
- All of the given

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Question No : 40 of 52 Marks: 1 (Budgeted Time 1 Min)

In 24-bit display ____number of different colors can be displayed.

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Answer (Please select your correct option)

- 256^3
- 256^7
- 256^5
- 256^6

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Question No : 41 of 52 Marks: 2 (Budgeted Time 4 Min)

What is meant by T-intersection in a polygonal model of surface?

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Answer (Please click here to Add Answer)

there's no guarantee that the line segments AB and BC lie on exactly the same pixels as the segment AC. Sometimes they do, and sometimes they don't, depending on the transformations and orientation. This can cause cracks to appear intermittently in the surface.

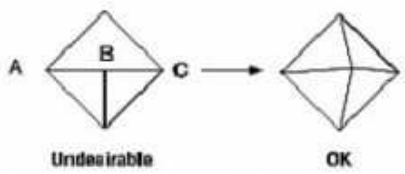

Figure 1 : Modifying an Undesirable T-intersection

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Question No : 42 of 52 Marks: 2 (Budgeted Time 4 Min)

Name the OpenGL function for viewing transformation through camera?

Answer (Please click here to Add Answer)

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

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Question No : 43 of 52 Marks: 2 (Budgeted Time 4 Min)

In 3D computer graphics, how can we find the unit vector?

Answer (Please click here to Add Answer)

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Unit Vector

Often in 3D computer graphics you need to convert a vector to a unit vector, ie a vector that points in the same direction but has a length of 1.

This is done by simply dividing each component by the length:

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Question No : 44 of 52 Marks: 2 (Budgeted Time 4 Min)

Given the vector V (3,2,1), you are required to find the projection of the vector V on the xz plane.

Answer (Please click here to Add Answer)

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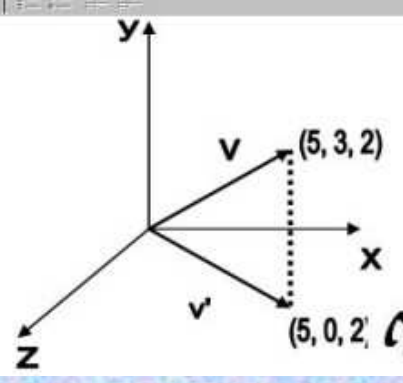
Projection of v onto the xz plane

example do by yourself



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Question No : 45 of 52 Marks: 3 (Budgeted Time 6 Min)

Explain critical angle in refraction of light?

Answer (Please click here to Add Answer)

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If we use Snell's law for light going from water to air, and plug in 90° for therefracted angle, we get 41.8° for the incident angle. This is called the critical angle atwhich we observe the phenomenon of total internal reflection. At any angle greater thanthis, light will not pass though a boundary but will be reflected internally.

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Question No : 46 of 52 Marks: 3 (Budgeted Time 6 Min)

Write down the simplified third degree equation of Bezier Curve?

Answer (Please click here to Add Answer)

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Bezier curves of any degree. In fact the degree of a Bezier curve is equal to n-1, where n is the number of control points.

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Question No : 47 of 52 Marks: 3 (Budgeted Time 6 Min)

Write down the three OpenGL routines for modeling transformations?

Answer (Please click here to Add Answer)

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The three OpenGL routines for modeling transformations are glTranslate*(), glRotate*(), and glScale*().

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Question No : 48 of 52 Marks: 3 (Budgeted Time 6 Min)

What are the diversities among the categories of polygons?

Answer (Please click here to Add Answer)

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Question No : 49 of 52 Marks: 5 (Budgeted Time 10 Min)

Explain Oren Nayer diffuse reflection? How it is different from Lambertian diffuse shading?

Answer (Please click here to Add Answer)

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Oren—Nayar Diffuse Reflection

Though there's been a lot of research on specular reflection models, there's been less research on diffuse reflection models. One of the problems of the standard Lambertian model is that it considers the surface as a smooth diffuse surface. Surfaces that are really rough, like sandpaper, exhibit much more of a backscattering effect, particularly when the light source and the view direction are in the same direction.

The classic example of this is a full moon. If we look at the picture of the moon shown in Figure 5, it's pretty obvious that this doesn't follow the Lambertian distribution—if it did, the edges of the moon would be in near darkness. In fact, the edges look as bright as the center of the moon. This is because the moon's surface is rough—the surface is made of a jumble of dust and rock with diffuse reflecting surfaces at all angles—thus the quantity of reflecting surfaces is uniform no matter the orientation of the surface; hence no matter the orientation of the surface to the viewer, the amount of light reflecting off the surface is nearly the same.

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Question No : 50 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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Question No : 51 of 52 Marks: 5 (Budgeted Time 10 Min)

Write the C program that is used to draw the RED color pixel on the 20th row and 20th column of the screen.

Answer (Please click here to Add Answer)

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Question No : 52 of 52 Marks: 5 (Budgeted Time 10 Min)

Suppose a light ray traveling through the air intersects the glass surface at an angle of 40° degrees, Find at which angle this light ray will be refracted from the glass surface?

Take,

Refractive Index of Glass, $n_{Glass} = 1.5$
Refractive Index of Air, $n_{air} = 1$

Answer (Please click here to Add Answer)

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