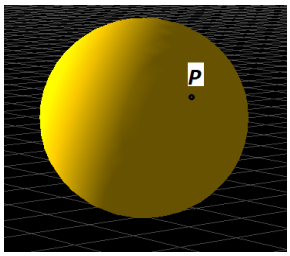
Started on	Monday, 12 March 2018, 2:30 PM
State	Finished
Completed on	Monday, 12 March 2018, 3:31 PM
Time taken	1 hour 1 min
Grade	**9.50** out of 10.00 (**95**%)

Question 1

Correct

Mark 1.00 out of 1.00

A point ***P*** is in the shadow region of a sphere when rendered using only diffuse reflections from a point light source.



Which one of the following properties is satisfied at *P* ?

Select one:

- a. The angle between the view vector and the surface normal vector at *P* is greater than or equal to 90 degrees.
- b. The angle between the light source vector and the surface normal vector at *P* is greater than or equal to 90 degrees. ✓
- c. The normal vector at *P* is perpendicular to the floor plane.
- d. The normal vector at *P* is parallel to the z-axis.
- e. The angle between the light source vector and the surface normal vector at *P* is less than 90 degrees.

Your answer is correct.

Correct

Marks for this submission: 1.00/1.00.

Question 2

Correct

Mark 1.00 out of 1.00

Which one of the following statements about diffuse reflection is true? (*l* = Light source vector, *n* = normal vector, *v* = view vector, *r* reflection vector)

Select one:

- a. Maximum diffuse reflection occurs in the direction of *v*.
- b. Maximum diffuse reflection occurs in the direction of *r*
- c. Maximum diffuse reflection occurs where *l* is parallel to *v*.
- d. Maximum diffuse reflection occurs when *l* has the same direction as *n*. ✓
- e. Maximum diffuse reflection occurs where *l* is perpendicular to *n*.

Correct

Marks for this submission: 1.00/1.00.

Question 3

Correct

Mark 1.00 out of 1.00

Which one of the following statements about the exponent *f* (the shininess term) in the equation for specular reflection is correct?

Select one:

- a. Increasing *f* increases the brightness of the specular highlight.
- b. Increasing *f* increases the wavelength of the reflected light
- c. Increasing the value of *f* decreases the size (diameter) of the specular highlight. ✓
- d. Increasing *f* decreases the brightness of the specular highlight.
- e. Increasing the value of *f* increases the size (diameter) of the specular highlight.

Correct

Marks for this submission: 1.00/1.00.

Question 4

Correct

Mark 1.00 out of 1.00

Which one of the following is a suggested method for suppressing specular highlights on a surface (eg. floor plane)?

Select one:

- a. Set the material's ambient and diffuse colours to black.
- b. Reset light's direction to (0, 0, 0).
- c. Set the material's specular component same as light's specular colour.
- d. Increase the Phong's constant (shininess) to a large value.
- e. Set the material's specular colour to black. ✓

Correct

Marks for this submission: 1.00/1.00.

Question 5

Correct

Mark 1.00 out of 1.00

Assuming that the colour properties of the light source and surface material have been set up properly for generating specular reflections, what condition should a vertex satisfy in order to be seen by a viewer as having a bright specular hightlight?

Select one:

- a. The viewer must be somewhere along the surface normal direction at the vertex.
- b. The vector from the vertex to the viewer must be perpendicular to the surface normal vector.
- c. The vector towards the viewer must be closely aligned to the direction of the light source.
- d. The direction of reflection vector at the vertex must be nearly parallel to the vector towards the viewer. ✓
- e. The direction of reflection vector at the vertex must be nearly perpendicular to the vector towards the viewer.

Your answer is correct.

Correct

Marks for this submission: 1.00/1.00.

Question 6

Correct

Mark 1.00 out of 1.00

Which one of the following statements is true?

Select one:

- a. The diffuse reflections from a surface do not change with variations in the surface normal direction.
- b. The ambient reflections from a surface vary with changes in the surface normal direction.
- c. The diffuse reflections from a surface do not change with variations in view direction. ✓
- d. The specular reflections from a surface do not change with variations in view direction.
- e. In OpenGL, the diffuse reflections from a surface have a constant value at every vertex of the surface.

Your answer is correct.

Correct

Marks for this submission: 1.00/1.00.

Question 7

Correct

Mark 1.00 out of 1.00

A spot light is defined with position (0, 100, 0) and direction (1, -1, 0). Which one of the following points lies on the spot light's axis?

Select one:

- a. (0, -100, 0)
- b. (100, 0, 0) ✓
- c. (0, 0, 100)
- d. (0, 0, 0)
- e. (0, 0, -100)

Correct

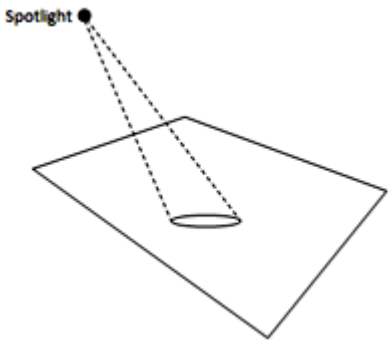
Marks for this submission: 1.00/1.00.

Question 8

Correct

Mark 1.00 out of 1.00

A scene consists of a single floor plane defined using a large quad, and a spot light that is directed towards the floor.



Which one of the following modification must made to the scene in order to get a proper rendering of spot illumination?

Select one:

- a. Change spot direction to (0, -1, 0)
- b. Subdivide the floor into several smaller quads. ✓
- c. Set the ambient material property of the floor to black.
- d. Change spot direction to (0, 0, -1)
- e. Reorient the floor plane perpendicular to the spot direction.

Correct

Marks for this submission: 1.00/1.00.

Question 9

Correct

Mark 0.75 out of 1.00

Which setting below corresponds to an omnidirectional light source?

Select one:

- a. glLightf(GL_LIGHT0, GL_SPOT_CUTOFF, 90);
- b. glLightf(GL_LIGHT0, GL_SPOT_CUTOFF, 180); ✓
- c. glLightf(GL_LIGHT0, GL_SPOT_CUTOFF, 3.1415);
- d. glLightf(GL_LIGHT0, GL_SPOT_CUTOFF, 1);
- e. glLightf(GL_LIGHT0, GL_SPOT_CUTOFF, 0);

Your answer is correct.

Correct

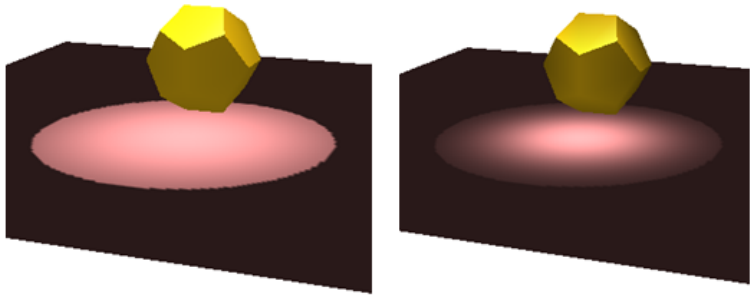
Marks for this submission: 1.00/1.00. Accounting for previous tries, this gives **0.75/1.00**.

Question 10

Correct

Mark 0.75 out of 1.00

Compare the two figures (a), (b) given below.



(a) (b)

Which of the following parameter changes was made to the spotlight to get the display in Fig.(b) from Fig. (a) ?

Select one:

- a. The value of the parameter GL_SPOT_CUTOFF was increased.
- b. The value of the parameter GL_SPOT_CUTOFF was decreased.
- c. The value of the parameter GL_SPOT_EXPONENT was decreased.
- d. The value of the parameter GL_SPOT_EXPONENT was set to 0.
- e. The value of the parameter GL_SPOT_EXPONENT was increased. ✓

Your answer is correct.

Correct

Marks for this submission: 1.00/1.00. Accounting for previous tries, this gives **0.75/1.00**.