



**FINAL TERM EXAMINATION III
SEMESTER SPRING 2005
CS602-COMPUTER GRAPHICS**

Total Marks:55

**Duration:120
Minutes**

StudentID/LoginID	
Name	
PVC Name/Code	
Date	25-07-2005

Maximum Time Allowed: (2 Hours)

Please read the following instructions carefully before attempting any of the questions:

1. Attempt all questions. Marks are written adjacent to each question.
2. Do not ask any questions about the contents of this examination from anyone.
 - a. If you think that there is something wrong with any of the questions, attempt it to the best of your understanding.
 - b. If you believe that some essential piece of information is missing, make an appropriate assumption and use it to solve the problem.
 - c. Write all steps, missing steps may lead to deduction of marks.

****WARNING: Please note that Virtual University takes serious note of unfair means. Anyone found involved in cheating will get an `F` grade in this course.**

For Teacher's use only

Question	Q1	Q2	Q3	Q4	Q5	Q6	Total
Marks							

Choose the most appropriate answer

1. Which of following is not the property of Phong shading:

- a. Phong shading is most realistic
- b. Phong shading is computationally costly
- c. Phong shading can produce shinny spots
- d. Phong shading is computationally least expansive

2. If resolution is 800 x 600 pixels and color intensity is 32bit and refresh rate is 70hz then the size of buffer will be: (in bits)

- a. $800 * 600 * 32 * 70$
- b. $800 * 600 * 4$
- c. $800 * 600 * 4 * 70$
- d. $800 * 600 * 32$

3. Which of the following is not true about Bitmap graphics and vector graphics:

- a. Bitmap graphics are easily convertible to vector graphics
- b. Vector graphics are realistic
- c. Vector graphics and Bitmap graphics are same
- d. All of the above

4. The equation

$$P(u) = au + b$$

Generally represents a:

- a. Plane
- b. Line
- c. 3D curve
- d. Point

5. Bezier curves may be:

- a. 2D
- b. 3D
- c. All of the above
- d. None of the above

Mark True or False

1. Open GL can handle user inputs and outputs very efficiently
2. All the concave polygons are not the convex polygons.
3. Schlick's simplification may or may not remove the exponential terms from the specular lighting equations.
4. To specify a Bezier curve of degree n , we need $n - 1$ control points
5. It is necessary for a line to lie in 3D.

Question No: 3

Marks: 10

- I. What is specular light, Give the equation of specular lighting given by Blinn.
- II. What is light Attenuation how we can calculate it.

Question No: 4

Marks: 10

- I. Suppose we have,

color vector $m_d = [0.3564, 0.9678, 0.5648]$

light source diffused color $s_d = [0.3333, 0.3582, 0.6584]$

The angle between light vector from vertex to the light source and the vertex normal vector is 30° , Calculate the diffuse light intensity i_d at the vertex.

- II. Suppose the refractive index of the material is 1.4 calculate its critical angle take refractive index of air as 1.

Hint: The critical angle is the angle at which the refracted angle is 90°

Question No: 5

Marks: 10

I. Suppose we want to perform the following 3D transformations using homogenous coordinates in the same order as given below

- a. Scaling (Take $S_x = 7$, $S_y = 12$, $S_z = 14$)
- b. Translation (Take $T_x = 13$, $T_y = 27$, $T_z = 18$)

Find the resultant composite matrix that can perform these tasks using the individual 3D transformation matrices using Homogenous coordinates.

II. Given are the three points that lie on a plane,

$P_1 < 2.0, 1.0, 2.0 >$

$P_2 < 9.0, 9.0, 8.0 >$

$P_3 < 15.0, 13.0, 11.0 >$

Find the equation of a normal to this plane.

Question No: 6

Marks: 10

1. Derive the formulae and give matrix for oblique projection.
2. Define hidden surface removal and explain its importance in 3D?