Exam - Computer Graphics
28 april 2011, 14-19

Electronic calculator NOT allowed

1. Explain the concepts of a *vertex shader* and a *fragment shader*. *(1.0)*

2. Give the formula for each of the terms in the *Phong reflection model*. *(1.0)*.

3. (a) What is *bump mapping* and what is it used for? *(0.4)*
    (b) Which data must the mesh provide in order to apply it? (*0.3*)
    (c) Describe the algorithm for bump mapping. (*0.3*)

4. (a) What is *ray-tracing*? Give as detailed an answer as you can. *(0.6)*
    (b) Explain how it is an approximation to the *rendering equation*. (*0.4*)

5.   Calculate the transformation matrix in homogenous coordinates for a 45 degree clockwise rotation around the axis (0,0,-1) and the point (2,3,0) (*1.0*).

6. (a) Explain how vertex attributes can be *linearly interpolated* over a triangle. *(0.4)*
    (b) How must this process be modified in order to get a *perspective correct* result. Give as detailed an answer as you can. (*0.6*)

THE END!