Name: _____ Roll Number: _____

1. (1 point) What is the grey value constancy assumption for computing optic flow?

2. (2 points) Derive the linearized optic flow constraint

$$I_x(x, y, z)u + I_y(x, y, z)v + I_z(x, y, z) = 0 \quad (1)$$

from the grey value constancy assumption. You may use Taylor's approximation.

3. (2 points) What is the aperture problem?
   A. Complete optic flow cannot be observed by looking at one pixel only.
   B. Only the flow component in the normal direction to the image edge can be observed.
   C. Both A and B.
   D. Image brightness depends on camera aperture.

4. (2 points) How does downsampling help in computing optic flow?
   A. Improves accuracy by making the displacements smaller and thereby improving Taylor's approximation.
   B. Increases speed by working on smaller images and then upsampling the results.
   C. Both A and B.
   D. It has no benefit.

5. (1 point) The linearised optic flow constraint in part (b) has infinite solutions for u and v. Why?

6. (2 points) What is Lucas & Kanade's solution to this problem of infinite solutions? You may explain in plain English.