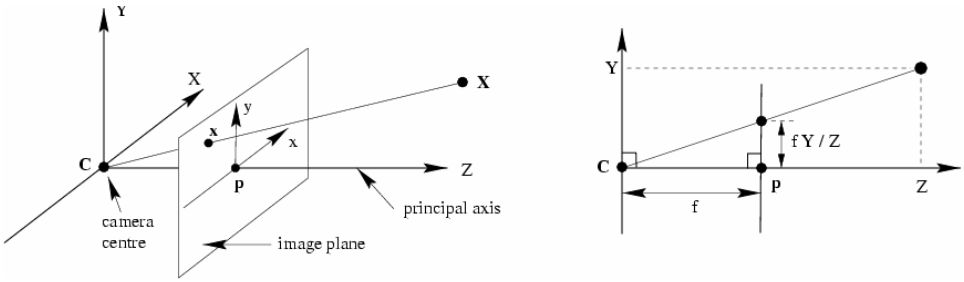
Computational Vision and Biological Perception
Biomedical Engineering
University of Coimbra

Exam Extra – Computational Vision (5 points)

14/Julho/2006 **Max Duration - 45 min**

Question 1:
Consider a camera in motion within a static scene.

a) Using the figure as reference, deduce mathematical matrix relation between the velocity **V** of a point **X** in the world and its correspondent velocity **v** projected in the image.



b) What is the expression for the components of velocity **v**, on the image, if the camera performs just translational motion?

Question 2:
What is the difference between “optical flux” e o “motion field” ?

Question 3:
Deduce the expression for the homography between points in the image plane 2D from a camera seeing a planar ground and points from a 3D plane in the scene (assume Z=0).

END