Computer Graphics and Image Processing

(a) Explain what a MIPmap is, how to create one, why one would want to use one, where one would be used, and how one is used. [8 marks]

(b) Describe an algorithm that converts a greyscale image into a black and white image using halftoning. Assume that the black and white image has eight times the resolution of the greyscale image in each dimension. [6 marks]

(c) Various types of visual artifact (“aliasing”) occur if images are rendered using only one sample per pixel.

(i) Describe at least three different artifacts that occur. [3 marks]

(ii) Describe a straightforward method to ameliorate these artifacts. [3 marks]