

## 2006 Paper 6 Question 5

### Computer Graphics and Image Processing

- (a) Standard colour printing uses the four ink colours: cyan, magenta, yellow and black.
- (i) Explain why this is so. [3 marks]
  - (ii) What benefits are there in using more than these four ink colours? [3 marks]
- (b) Describe an algorithm for converting a greyscale image to a bilevel (black and white) image while retaining as good a quality as possible. Your algorithm should be for the situation where each greyscale pixel maps to a single bilevel pixel. [6 marks]
- (c) Describe operations on images which achieve the following effects:
- (i) lighten an image which is too dark; [2 marks]
  - (ii) remove salt and pepper noise (“shot noise”) from an image; [2 marks]
  - (iii) locate  $45^\circ$  edges in an image; [2 marks]
  - (iv) convert a colour image (in RGB format) to a greyscale image while preserving the perceived luminance. [2 marks]