MODULE C DATA REPRESENTATION · C9

Representing images

Original practice questions · 21 marks · ~25 minutes · OCR J277 spec 1.2.4

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. No calculator. The marks for each part are shown in brackets [ ]. The total for this worksheet is **21 marks**.

1

Total: 3 marks

(a) Define the term **pixel**. **[1]**

(b) State what is meant by the **colour depth** of an image. **[1]**

(c) State what is meant by the **resolution** of an image. **[1]**

2 **Total: 5 marks**

A sign-making company stores its designs as bitmap image files.

(a) State what is meant by **metadata**. **[1]**

(b) Identify **two** items of metadata that could be stored in the file of a bitmap image. **[2]**

1

2

(c) Explain why the metadata is needed when the image is displayed. **[2]**

3 **Total: 4 marks**

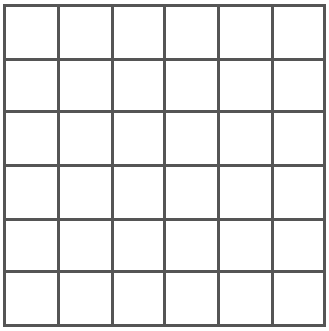
The company also makes small black-and-white icons for its door signs.

(a) An icon file stores this metadata: width 6 pixels, height 6 pixels, colour depth 1 bit. A 1 is a black pixel and a 0 is a white pixel. The pixels are stored row by row, starting at the top left. **[2]**

The pixel data is:

`001100 011110 111111 010010 010010 011110`

Shade the grid to show the image.



(b) The company wants the icon to use 4 different colours. State the smallest colour depth it needs. **[1]**

(c) State how many different colours can be represented with a colour depth of 3 bits. **[1]**

4 Total: 1 mark

(a) A logo uses 50 different colours. State the **minimum** number of bits per pixel needed to store the logo. **[1]**

5 Total: 4 marks

(a) Tick (✓) **one** box in each row to show whether each statement is true or false. **[4]**

Statement	True	False
Increasing the resolution of an image increases its file size		
A colour depth of 8 bits allows 8 different colours		
Increasing the colour depth adds more pixels to the image		
Reducing the colour depth makes the image file smaller		

6 Total: 4 marks

A photographer uploads photographs to a gallery website. The website asks for smaller image files, so the photographer considers reducing the resolution and the colour depth of each photograph.

(a) Explain how reducing the **resolution** and reducing the **colour depth** would affect the photographs. Refer to the quality of the images **and** their file size. **[4]**

Total for this worksheet: 21 marks