



### 1.1.5 Compression Techniques

#### Computer Science (9608)

May/June 2015.P11/P12

2. (c) Explain the difference between *lossless* and *lossy* data compression techniques. [3]

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3 (c) Images can be compressed to reduce file size.

(i) Describe how lossless compression techniques work. [2]

(ii) Describe how lossy compression techniques work. [2]

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4 A group of students broadcast a school radio station on a website. They record their sound clips (programmes) in advance and email them to the producer.

(b) The students use software to compress the sound clips before emailing them.

(i) Circle your chosen method of compression and justify your choice.  
Lossy / Lossless [3]

Students also email images to the radio station for use on its website.

These are compressed before sending using run-length encoding (RLE).

(ii) Explain what is meant by run-length encoding. [3]

(iii) The following diagrams show:

- the denary colour code that represents each colour
- the first three rows of a bitmap image

Colour symbol	Colour code (denary)
B	153
W	255

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	B	B	B	B	B	B	B	B	B	B	W	W	W	B	B	B
1	B	B	B	B	B	B	B	B	B	W	W	W	W	W	W	B
2	B	B	B	B	B	B	B	W	W	W	W	W	W	W	W	W
...	⋮															
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Show how RLE will compress the first three rows of this image.

Row 1: .....

Row 2: .....

Row 3: .....

[2]

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2 A logo is designed as a bitmap image.

(b) A black and white bitmap image is shown.



(ii) The image is compressed before it is attached to an email.

Explain how run-length encoding (RLE) will compress the image.

[2]

