6 **(a)** A sound file is compressed by reducing the sampling rate.

State whether this is lossless or lossy compression. Justify your choice.

Type of compression .....

Justification .....

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.....

[1]

(b) The following table shows some words and corresponding denary values.

Word	Denary value
Computing	55
Science	56
Computers	57
are	58
Brilliant!	59
is	60
Fun!	61
Amazing!	62

The following table shows three bytes of data that have been received.

Use the table to find the corresponding words from the binary values received.

Binary value	00111000	00111100	00111110
Word			

Working .....

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[1]

(c) A computer system uses even parity. The least significant (rightmost) bit of each byte is the parity bit.

(i) Complete the byte by writing the missing parity bit:

parity bit ↓

0	1	0	1	1	1	0	

[1]

(ii) The computer also uses parity block check. The parity block check uses even parity. Computer A transmits four bytes of data to computer B, followed by a parity byte. Computer B receives the following sequence of bytes.

							parity bit ↓
	1	0	1	1	0	1	1	1
	0	1	1	1	0	0	0	0
	0	0	0	1	1	0	1	1
	0	1	1	1	0	1	0	0
parity byte →	1	0	1	0	0	0	0	0

Following transmission, one of the four bytes of data has an error in one of the bits.

Circle the bit that has been altered during the data transfer. [1]

(d) A bitmap image has a resolution of 1000 pixels wide by 2000 pixels high. The colour depth is 16 bits.

Calculate an estimate of the file size in megabytes.

Show your working.

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File size ..... megabytes

[2]