MODULE C DATA REPRESENTATION · C11

Compression, lossy and lossless: mark scheme

20 marks · OCR J277 spec 1.2.5

How to use. 1 mark per bullet up to the maximum shown. **/** separates alternative words; **//** separates alternative answers. Words in (brackets) are not needed for the mark. J277 does not require any specific compression method, so none is asked for. Credit the type (lossy / lossless); do not accept a file format in place of the type.

QUESTION	ANSWER	MARKS	GUIDANCE
1(a) J277 1.2.5	Takes up less storage space Quicker to send / upload / download // shorter transmission time Uses less bandwidth Can fit under a file size limit (e.g. for email attachments)	**2**	Max 2. Do not accept "faster" alone without saying what is faster. Do not accept "more secure".
2(a) J277 1.2.5	Row 1: Lossy Row 2: Lossless Row 3: Lossy Row 4: Lossless	**4**	1 mark per row. Two ticks in a row = 0 for that row.
3(a) J277 1.2.5	Lossless (1) No data is lost / the original file is restored exactly Text needs every character to be kept // lossy would remove data, so characters / words would be lost or changed The file could be corrupted / might not open / the agreement would be wrong if any data was lost	**3**	1 mark for lossless, then max 2 for the justification. If lossy is given, 0 marks for the whole part. Do not accept "the text would go blurry" (lossy does not blur letters; OCR examiners' report, June 2022).
3(b) J277 1.2.5	Lossy (1) Gives a much smaller file // smaller than lossless So the photos / pages load quicker for visitors // use less bandwidth / storage A small loss of quality is unlikely to be noticed // the photos still look acceptable	**3**	1 mark for lossy, then max 2 for the justification. Lossless with a valid reason (e.g. the photos must keep full quality) scores max 2. Do not accept "no data is removed" as a reason for lossy.
4(a) J277 1.2.5	Data is permanently removed / the original cannot be restored Quality may be reduced (e.g. a blockier image, poorer sound) Not suitable for text / program files	**1**	Max 1.
4(b) J277 1.2.5	The compressed file is (usually) larger than with lossy Does not reduce the file size as much // needs more storage / bandwidth / time to send than lossy	**1**	Max 1. Do not accept "loses data" (reversed).

QUESTION	ANSWER	MARKS	GUIDANCE
5(a) J277 1.2.5	Lossy permanently removes data (from the file) A program needs every bit / instruction to be exactly the same So the program would be corrupted / would not run / would not work (correctly)	**2**	Max 2. Do not accept "lower quality" alone.
6(a) J277 1.2.5	*Advantages* Much smaller files (than lossless) So songs stream / download quicker // less buffering Uses less bandwidth / mobile data // less storage on phones / servers Small losses in quality may not be noticed by listeners *Disadvantages* Data is permanently removed / the original cannot be restored Sound quality may be lower // listeners may notice the drop in quality	**4**	Max 4. At least 1 advantage and 1 disadvantage needed for full marks; otherwise max 3. Headings in italics are not marking points.

Total: 20 marks