MODULE C DATA REPRESENTATION · C10

Representing sound

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) State what is meant by the **sample rate** of a sound file. **[1]**

(b) State the unit used to measure sample rate. **[1]**

(c) State what is meant by the **bit depth** of a sound file. **[1]**

2

Total: 4 marks

(a) Complete the description of how sound is sampled and stored. Use words from the box. Not all words are used. **[4]**

amplitude	analogue	binary	frequency
pixels	random	regular	digital

Sound in the real world is an ..... wave. To store it, the height of the wave, called its ....., is measured. These measurements are taken at ..... intervals. Each measurement is a sample, and it is stored in ..... .

3

Total: 2 marks

(a) A sound file has a bit depth of 3 bits. State how many different values each sample can take. **[1]**

(b) The bit depth is increased to 4 bits. State how many different values each sample can now take. **[1]**

4 Total: 4 marks

(a) A recording is changed in four different ways. For each change, tick (✓) **one** box for playback quality **and one** box for file size. Everything else stays the same. **[4]**

Change	Quality better	Quality worse	Quality same	File larger	File smaller
Sample rate increased					
Bit depth decreased					
Duration increased					
Sample rate decreased					

5 Total: 4 marks

A charity records phone messages for its helpline using a sample rate of 8,000 Hz and a bit depth of 8 bits.

(a) Explain why the 8,000 Hz recording sounds less like the original voice than a recording made at 44,100 Hz with the same bit depth. **[2]**

(b) The charity considers increasing the bit depth from 8 bits to 16 bits. Explain **one** disadvantage of doing this. **[2]**

6 **Total: 4 marks**

A wildlife ranger's recorder makes two recordings of birdsong with the same sample rate and bit depth. One lasts 2 minutes and the other lasts 4 minutes.

(a) State the effect on the file size of the 4-minute recording compared with the 2-minute recording. **[1]**

(b) Explain why the 4-minute recording does **not** have better playback quality than the 2-minute recording. **[2]**

(c) The ranger wants the 4-minute recording to have a smaller file size. State **one** setting that could be changed, and how, to do this. **[1]**

Total for this worksheet: 21 marks