MODULE C DATA REPRESENTATION · C1

Why computers use binary

Original practice questions · 20 marks · ~25 minutes · Cambridge 0478 syllabus 1.1.1

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 **20 marks**.

1

Total: 3 marks

(a) Binary is a number system. State the base of the binary number system. **[1]**

(b) Give the name of a single binary digit. **[1]**

(c) State the name of the components inside a computer that data is processed using. **[1]**

2

Total: 4 marks

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

Statement	True	False
Sound must be converted to binary before a computer can process it		
Binary uses the digits 1 and 2		
Data being processed is stored in registers		
Only numbers are represented in binary; text is stored as letters		

3 **Total: 4 marks**

A farming co-operative installs a weather station in a field. It takes photographs of the sky, records the sound of the wind, measures the temperature and shows short text alerts on a display.

(a) Identify **three** different types of data the weather station must represent in binary. **[3]**

1

2

3

(b) State where, in the weather station's processor, data is stored while it is being processed. **[1]**

4 **Total: 4 marks**

Each extra bit doubles the number of different patterns of 1s and 0s that a group of bits can make.

(a) Complete the table to show how many different patterns each group of bits can make. **[3]**

Number of bits	Number of different patterns
1	2
4	.....
8	.....
16	.....

(b) State the name given to a group of 4 bits. **[1]**

5 **Total: 2 marks**

(a) Explain why computers use binary to represent data. **[2]**

6 **Total: 3 marks**

A hospital's IT manager writes in a staff guide: *"Computers use binary because they can only understand binary."*

(a) Explain why this statement is not a full explanation. Give a better explanation of why computers use binary to represent all forms of data. **[3]**

Total for this worksheet: 20 marks