MODULE C DATA REPRESENTATION · C8

Text and character sets: ASCII and Unicode

Original practice questions · 20 marks · ~25 minutes · Cambridge 0478 syllabus 1.2.1

Name _____ Date _____

Instructions. Answer all questions in the spaces provided. No calculator. You do not need to remember any character codes: use the codes given. Write ASCII codes as 8-bit binary. The marks for each part are shown in brackets [ ]. The total for this worksheet is **20 marks**.

1

Total: 3 marks

(a) Explain why text must be converted to binary before a computer can process it. **[2]**

(b) State what is meant by a **character set**. **[1]**

2

Total: 5 marks

A factory machine displays short product codes using ASCII. The ASCII code for **A** is 65 (01000001).

(a) Give the denary ASCII code for **D**. **[1]**

Answer: .....

(b) Give the 8-bit binary ASCII code for **C**. **[1]**

Answer: .....

(c) Write the code **DAB** in 8-bit binary ASCII. **[3]**

Character	8-bit binary ASCII code
D	
A	
B	

3 **Total: 3 marks**

A weather station stores a three-letter word in ASCII. The ASCII code for lower case **a** is 97. The stored codes are:
01100100 01101001 01100111

(a) Convert each code to its character. Show your working. **[3]**

Word: .....

4 **Total: 5 marks**

An online messaging service is used in many countries. Users write in many languages and send emojis.

(a) Give **two** differences between ASCII and Unicode. **[2]**

1 .....

2 .....

(b) Explain why the service uses Unicode rather than ASCII. **[3]**

5 **Total: 4 marks**

A message contains 40 characters. ASCII uses 8 bits per character. The Unicode format used stores 32 bits per character.

(a) Calculate the number of **bytes** needed to store the message in ASCII. Show your working. **[2]**

Answer: ..... bytes

(b) Calculate the number of **bytes** needed to store the message in Unicode. **[1]**

Answer: ..... bytes

(c) State the effect on the file size of using Unicode instead of ASCII. **[1]**

Total for this worksheet: 20 marks