MODULE C DATA REPRESENTATION · C8

# Character sets: ASCII and Unicode

Original practice questions · 20 marks · ~25 minutes · OCR J277 spec 1.2.4

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. ASCII codes are written as 8 bits. The marks for each part are shown in brackets [ ]. The total for this worksheet is **20 marks**.

## 1

Total: 2 marks

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

**(b)** State the number of bits used to represent each character in ASCII. **[1]**

Answer: .....

## 2

Total: 3 marks

A warehouse label printer uses ASCII. Part of its character set is shown below.

| Character | ASCII code (denary) | ASCII code (binary) |
|---|---|---|
| C | 67 | 01000011 |
| D | 68 | 01000100 |
| E | | |
| F | | |

**(a)** Identify the denary ASCII code for **F**. **[1]**

Answer: .....

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

Answer: .....

**(c)** The printer also prints a lower case **f**. Explain why its code is **not** the same as the code for **F**. **[1]**

**3** **Total: 3 marks**

The ASCII code for **A** is 65, which is 01000001 in 8-bit binary.

**(a)** Write the word **BAG** in 8-bit binary ASCII. One character per row. **[3]**

| Character | 8-bit binary ASCII code |
|---|---|
| B | |
| A | |
| G | |

**4** **Total: 3 marks**

A taxi firm's booking system stores a three-letter area name in ASCII. The ASCII code for lower case **a** is 97. The stored codes are:
**01100011 01100001 01100010**

**(a)** Identify the three characters that are stored. Show your working. **[3]**

Characters: .....

**5** **Total: 4 marks**

**(a)** State the number of different characters that can be represented using 8 bits per character. **[1]**

Answer: .....

**(b)** A simple display on a machine uses a character set with 4 bits per character. State the maximum number of characters it can represent. **[1]**

Answer: .....

**(c)** Explain the relationship between the number of bits per character and the number of characters a character set can represent. **[2]**

**6** **Total: 5 marks**

A travel company sends text messages to customers around the world. Messages are written in many languages, including Chinese and Arabic, and some include emojis.

**(a)** Identify **one** benefit of using Unicode instead of ASCII. **[1]**

**(b)** Identify **one** drawback of using Unicode instead of ASCII. **[1]**

**(c)** Explain why the company should use Unicode rather than ASCII for its messages. **[3]**

**Total for this worksheet: 20 marks**