2.5 Data Representation: Number Systems: 10-minute Pack

Total Marks

OCR J277 · Calculators not allowed · about 10 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Whole numbers can be converted between denary (base 10) and binary (base 2) using the binary place values 128, 64, 32, 16, 8, 4, 2 and 1.

(a) Convert the denary number 6 to a 4-bit binary number. **(1)**

(b) Convert the 4-bit binary number 1011 to denary. **(1)**

(c) Convert the denary number 250 to an 8-bit binary number. Show your working. **(2)**

(Total for Question 1 is 4 marks)

© Revision Library | revisionlibrary.co.uk

2 Hexadecimal (base 16) uses the digits 0-9 and the letters A-F, where A=10, B=11, C=12, D=13, E=14 and F=15.

(a) Convert the denary number 58 to hexadecimal. Show your working. **(2)**

(b) Convert the hexadecimal number 2F to denary. Show your working. **(2)**

(c) State the largest denary value that can be represented using a single hexadecimal digit. **(1)**

(Total for Question 2 is 5 marks)

© Revision Library | revisionlibrary.co.uk

Mark scheme · 2.5 Data Representation: Number Systems: 10-minute Pack

Question 1

(a) 0110 cao **B1**

(a) Answer: 0110

(b) 11 cao **B1**

(b) Answer: 11

(c) correct place values identified, e.g. 128+64+32+16+8+2 = 250 **M1**

(c) 11111010 cao **A1**

(c) Answer: 11111010

Question 2

(a) 58 divided by 16 to give 3 remainder 10 (i.e. 3 and A) shown **M1**

(a) 3A cao **A1**

(a) Answer: 3A

(b) 2x16 and F(=15)x1 identified **M1**

(b) 47 cao **A1**

(b) Answer: 47

(c) 15 (F) cao **B1**

(c) Answer: 15

© Revision Library | revisionlibrary.co.uk