2.9 Data Representation and Theory of Computation: 10-minute Pack

Total Marks

AQA 7517 · Calculators not allowed · about 10 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Number systems are used throughout computer systems to represent data in different, equivalent forms.

(a) Convert the denary integer 187 to 8-bit unsigned binary, showing your method. **(2)**

(b) Convert the 8-bit unsigned binary number 01011110 to denary, showing your method. **(2)**

(c) Convert the 8-bit binary number from part (b), 01011110, to hexadecimal, showing your method (split into nibbles). **(2)**

(d) Convert the hexadecimal value A9 to an 8-bit binary number, and state its denary value. **(2)**

(Total for Question 1 is 8 marks)

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Mark scheme · 2.9 Data Representation and Theory of Computation: 10-minute Pack

Question 1

(a) correct place values identified and summed, e.g. 128+32+16+8+2+1=187, or an equivalent method (e.g. repeated division by 2) shown	**M1**
(a) 10111011 cao	**A1**
(a) Answer: 10111011	
(b) correct place values applied to each 1 bit, e.g. 64+16+8+4+2	**M1**
(b) 94 cao	**A1**
(b) Answer: 94	
(c) binary correctly split into two 4-bit nibbles: 0101 and 1110	**M1**
(c) 5E cao	**A1**
(c) Answer: 5E	
(d) A correctly converted to 1010 and 9 correctly converted to 1001, giving 10101001	**M1**
(d) denary value 169 correctly stated (oe, either from the hex or the binary)	**A1**
(d) Answer: 10101001, denary 169	

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