

Q1.

State the denary representation of the binary number 10010111

[1 mark]

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.....

Q2.

State the **denary** representation of the binary number 10111010.

[1 mark]

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Q3.

State the hexadecimal representation of the denary number 125. You must show your working.

[2 marks]

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.....
.....

Q4.

Give **one** reason why programmers often use hexadecimal, instead of binary, to represent numbers.

[1 mark]

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.....

Q5.

State the **hexadecimal** representation of the binary number 1110.

[1 mark]

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Q6.

State the **denary** representation of the hexadecimal number 4C. You **must** show your working.

[2 marks]

.....

.....

.....

Q7.

State the **binary** representation of the hexadecimal number CE. You must show your working.

[2 marks]

Q8.

Place these **three** numbers into order of size (1–3 where 1 is the largest and 3 is the smallest).

Number	Order (1–3)
The denary number 12	
The binary number 1110	
The hexadecimal number D	

[2 marks]

Q9.

What is the minimum number of bits needed to be able to represent any character from a character set that contains only the 26 lower-case letters of the alphabet?

[1 mark]

Mark scheme**Q1.**

151;	1
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Q2.

186;	1
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Q3.

<p>7D;</p> <p>If there is no hexadecimal answer then do not reward any working;</p> <p>If the answer given is 7D then reward any attempt at working;</p> <p>If the hexadecimal answer given is not 7D then a maximum of 1 mark can be awarded for any of the following working out stages:</p> <ul style="list-style-type: none"> • convert to binary 0111 1101 • convert each of their nibbles to hex A. If incorrect bit pattern is converted to its corresponding hex value • show division of 125 by 16 giving the quotient and remainder; 	2
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Q4.

<p>1 mark each for any correct answer.</p> <p>Examples include:</p> <p>Hexadecimal is easier (for humans) to read (than binary);</p> <p>Hexadecimal is easier to convert (to binary) than denary;</p> <p>Numbers are displayed in a more compact way (in hexadecimal than in binary);</p> <p>It is quicker to type in (hexadecimal numbers than binary numbers);</p> <p>It is more accurate to type in (hexadecimal numbers than binary numbers);</p> <p>R. anything that implies less memory is used.</p>	1
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Q5.

E;	1
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Q6.

76; If the answer given is 76 then reward any attempt at working; If the answer given is not 76 then a maximum of 1 mark can be awarded for any of the following working out stages: <ul style="list-style-type: none">• Show multiplication of 4 by 16 and another number between 0 and 16 by 1 (i.e. allow C to be incorrectly converted to decimal).• Convert to binary 1001100 but then incorrectly converted to denary // convert to binary 01001100 but then incorrectly converted to denary.• Convert to a binary number other than 1001100, which must consist of more than 4 bits, but then convert this binary number to its correct decimal representation.	2
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Q7.

1100 1110; If answer given is 11001110 then reward any attempt at working; If the answer given is not 11001110 then a maximum of 1 mark can be awarded for any of the following working out stages: <ul style="list-style-type: none">• C or E (but not both) are converted to an incorrect binary representation but are then combined with the other correct representation. For example C is converted incorrectly to 1001 but E is converted correctly to 1110 and the answer given is 10011110;• C is converted to a denary number other than 12 and/or E is converted to a denary number other than 14 but both of the denary numbers are correctly converted to binary.• The candidate has attempted to multiply 16 by 12 and 1 by 14 but has then incorrectly converted the result into binary (through either an initial multiplication error or binary conversion error but not both).	2
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Q8.

1 mark for one correct row; Both marks for all three correct rows;	2								
<table border="1"><thead><tr><th>Number</th><th>Order (1 – 3)</th></tr></thead><tbody><tr><td>The denary number 12</td><td>3</td></tr><tr><td>The binary number 1110</td><td>1</td></tr><tr><td>The hexadecimal number D</td><td>2</td></tr></tbody></table>	Number	Order (1 – 3)	The denary number 12	3	The binary number 1110	1	The hexadecimal number D	2	
Number	Order (1 – 3)								
The denary number 12	3								
The binary number 1110	1								
The hexadecimal number D	2								
R. if duplicate numbers have been used									

Q9.

5;	1
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