Unit 1.1 Number Systems

1. A denary value can be converted into hexadecimal and binary.

(a) Complete the table to show the hexadecimal and 8-bit binary values of the given denary values.

Denary	Hexadecimal	8-bit binary
49		
123		
200		

Working space

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....[6]

(b) Give **two** benefits, to users, of converting binary values to hexadecimal.

Benefit 1 ....

Benefit 2 ....[2]

(c) Hexadecimal is used to represent Hypertext Markup Language (HTML) colour codes in computer science.

Identify **three** other ways that hexadecimal is used in computer science.

1 ....

2 ....

3..[3]

2. (a) Denary values are converted to binary values to be processed by a computer.
Draw **one** line from each denary value to the correctly converted 8-bit
binary value. [3]

Denary		8-bit binary
		00100001
41		10100110
		00101001
174		10000110
		10101110
86		01010110

Working space

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(b) Binary values can also be converted to denary values.
Give the correct denary value for the 12-bit binary value 000101010111
Show all your working.

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Denary value .... [2]

3. Hexadecimal is used for Hypertext Markup Language (HTML) colour codes.

An HTML colour code is: **#2F15D6**

Each pair of digits is stored as binary in an 8-bit register.

(a) Give the 8-bit binary value that would be stored for each pair of hexadecimal digits.

2F								

15								

D6								

[6]

Working space

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(b) HTML colour codes and Media Access Control (MAC) addresses are two examples of where hexadecimal is used in Computer Science.

Give **two** other examples of where hexadecimal can be used in Computer Science.

Example 1 ....

Example 2 ....[2]

4. An aeroplane has a small display screen above each seat, to display the seat number.

The seat number is a hexadecimal value. A 12-bit binary register is used to store the data to display each seat number.

Three seat numbers, 05A, 18C and 29F, are allocated to passengers.

Give the 12-bit binary value that would be stored for each hexadecimal seat number.

05A ....

18C ....

29F ....

Working space [6]

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5. **Two** of the registers store the values 010000001101 and 000001111110

Give the hexadecimal seat number that would be displayed on the screen for each of these binary values.

010000001101 ....

000001111110 ....

Working space [4]

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6. The values in the MAC address are hexadecimal values. Convert the **three** given hexadecimal values into 8-bit binary.

14 ....

A0 ....

C9 ....[3]

Working space

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