Hexadecimal Homework

You should refer to the **homework policy** for details on how this homework should be submitted.

Attempt all questions and show all working.

Question 1

Write the following binary numbers in hexadecimal.

1. 01011001
|8 4 2 1| 8 4 2 1|
|0 1 0 1| 1 0 0 1|
4+1 = 5 = 5
8+1 = 9 = 9
So 5,9
2. 01101101
|8 4 2 1 | 8 4 2 1|
|0 1 1 0 | 1 1 0 1|
4+2 = 6 = 6
8+4+1 = 13 = D
So = 6,D
3. 1111101011001110
|8 4 2 1| 8 4 2 1| 8 4 2 1| 8 4 2 1|
|1 1 1 1| 1 0 1 0| 1 1 0 0| 1 1 1 0|
8+4+2+1= 15 = F
8+2 = 10 = A
8+4= 12 = C
8+4+2= 14 = E
So = F, A, C, E
4. 1010000111011110
|8 4 2 1| 8 4 2 1|8 4 2 1|8 4 2 1|
|1 0 1 0| 0 0 0 1|1 1 0 1| 1 1 1 0|
8+2= 10 = A
1= 1
8+4+1= 13 = D
8+4+2 = 14 = E

So = A, 1, D, E

(**8 marks**)

Question 2

Write the following denary numbers in hexadecimal.

1. 37_{10}
|8421|8421|8421|
|1111|1111|0111| = 37_{10}
| 15 | 15 | 7 |
| F | F | 7 | = 37_{10} = FF7

2. 72_{10}

|8421|8421|8421|8421|8421|

|1111|1111|1111|1111|1100|

| 15 | 15 | 15 | 15 | 10 |

| F | F | F | F | A | = 72_{10} = FFFFA

3. 140_{10}

|8421|8421|8421|8421|8421|8421|8421|8421|8421|8421|

|1111|1111|1111|1111|1111|1111|1111|1111|1111|0101|

|15 |15 |15 |15 |15 |15 |15 |15 |15 |5 |

|F|F|F|F|F|F|F|F|F|5 |

| = 140_{10} = FFFFFFFF5

4. 119_{10}

|8421|8421|8421|8421|8421|8421|8421|8421|8421|8421|

|1111|1111|1111|1111|1111|1111|1111|1111|1111|1110|

|15 |15 |15 |15 |15 |15 |15 |15 |15 |14 |

|F|F|F|F|F|F|F|E|

|= 119_{10} = FFFFFFFE

(**8 marks**)

Question 3

Write the following hexadecimal numbers in binary.

1. $5A_{16}$
5|A

8421|8421
0101|1010
binary= 01011010
**2. $B0D_{16}$
B|0|D
8421|8421|8421
1011|0000|1101
binary= 101100001101
3. $FFFF_{16}$
F|F|F|F
8421|8421|8421|8421
1111|1111|1111|1111
binary= 1111111111111111
4. $2C8E_{16}$
2|C|8|E
8421|8421|8421|8421
0010|1100|1000|1110
binary= 0010110010001110
(**8 marks**)

Question 4

Write the following hexadecimal numbers in denary.

1. 28_{16}
2|8 = 2, 8
2+8= 10
denary = 10
2. $A4_{16}$
A|4 = 10, 4 = 10+4 = 14
denary = 14
3. $5B_{16}$
5|B = 5, 11 = 5+11 = 16
denary = 16
4. $12B_{16}$
1|2|B = 1, 2, 11 = 1+2+11 = 14
denary = 14

(**8 marks**)

Total 24 marks