**Homework 3: Binary to decimal conversion**

# 1. For each of the binary values below, write down the decimal equivalent. Use the grid below to help you.

1. 111
2. 110010
3. 101011
4. 10001011
5. 11111110

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **128** | **64** | **32** | **16** | **8** | **4** | **2** | **1** |  | **Decimal** |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | 1 | 1 | 1 | = |  |
|  |  | 1 | 1 | 0 | 0 | 1 | 0 | = |  |
|  |  | 1 | 0 | 1 | 0 | 1 | 1 | = |  |
| 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | = |  |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | = |  |

 [5]

# 2. For each of the decimal values below, write down the binary equivalent. Use the grid below to help you.

1. 12
2. 32
3. 60
4. 189
5. 200

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **128** | **64** | **32** | **16** | **8** | **4** | **2** | **1** |  | **Decimal** |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | = | 12 |
|  |  |  |  |  |  |  |  | = | 32 |
|  |  |  |  |  |  |  |  | = | 60 |
|  |  |  |  |  |  |  |  | = | 189 |
|  |  |  |  |  |  |  |  | = | 200 |

 [5]

3. Refer to the ASCII Codes sheet to complete questions 3 and 4.

 Convert the following character strings to binary using the ASCII codes sheet. (Do not convert the quote marks.)

1. “Fred” [2]

1. “12” [1]

4. Why can you not perform arithmetic with numbers entered as ASCII characters? [2]

 Use the example “12” and the binary equivalent of the decimal number 12 to explain.

 [Total 15 marks]