

Question 1:

$$a) 10011011_2 = \begin{array}{cccccccc} 128 & 64 & 32 & 16 & 8 & 4 & 2 & 1 \\ 1 & 0 & 0 & 1 & 1 & 0 & 1 & 1 \end{array}$$

$$128 + 16 + 8 + 2 + 1 = \boxed{155_{10}}$$

$$b) 1101101_2 = \begin{array}{ccccccc} 64 & 32 & 16 & 8 & 4 & 2 & 1 \\ 1 & 1 & 0 & 1 & 1 & 0 & 1 \end{array}$$

$$64 + 32 + 8 + 4 + 1 = \boxed{109_{10}}$$

$$c) 3A8_{16} = 8 \times 16^0 + 10 \times 16^1 + 3 \times 16^2 = \boxed{936_{10}}$$

$$d) 2214_5 = 4 \times 5^0 + 1 \times 5^1 + 2 \times 5^2 + 3 \times 5^3 = 4 + 5 + 50 + 250 = \boxed{309_{10}}$$

Question 2:

$$a) 69_{10} = \begin{array}{ccccccc} 64 & 32 & 16 & 8 & 4 & 2 & 1 \\ 1 & 0 & 0 & 0 & 1 & 0 & 1 \end{array}$$

$$= \boxed{100101_2}$$

$$b) 485_{10} = \begin{array}{ccccccc} 256 & 128 & 64 & 32 & 16 & 8 & 4 & 2 & 1 \\ 1 & 1 & 1 & 1 & 0 & 0 & 1 & 0 & 1 \end{array}$$

$$= \boxed{111100101_2}$$

$$c) 6D1A_{16} = \begin{array}{l} \# \quad \begin{array}{cccc} 8 & 4 & 2 & 1 \\ 6 = & 0 & 1 & 1 & 0 \end{array} \quad \begin{array}{cccc} 8 & 4 & 2 & 1 \\ D = & 1 & 1 & 0 & 1 \end{array} \\ \quad \begin{array}{cccc} 8 & 4 & 2 & 1 \\ 1 = & 0 & 0 & 0 & 1 \end{array} \quad \begin{array}{cccc} 8 & 4 & 2 & 1 \\ A = & 1 & 0 & 1 & 0 \end{array} \end{array}$$

$$= \boxed{(0110 \ 1101 \ 0001 \ 1010)_2}$$