Домашнее задание №1.

Вариант 77.

A = 1425 , B = 0,777

Задание 1.

а) BCD

0001.	0100	0010.	0101
1	4	2	5

б) ASCII

0011.	0001	0011.	0100	0011.	0010	0011.	0101
	1		4		2		5

Задание 2.

$A = 1425_{10} = 10110010001_2$

A = 0 | 0000 1011 0010 0001

$[-A]_{прямой}$ = 1.000 0101 1001 0001

$[-A]_{обр.}$ = 1.111 1010 0110 1110

$[-A]_{доп.}$ + 1 = 1.111 1010 0110 1111

-A = 1 | 111 1010 0110 1111

Задание 3.

$A = 1425_{10} = 591_{16} = (0,591)_{16} \cdot 16^3$

$X_A = P_A + 64 = 3 + 64 = (67)_{10} = (1000011)_2$

A = 0 | 100 0011 | 1011 0010 0010 0000 0000 0000

$B = 0{,}777 = (0, C6E978)_{16} \cdot 16^0$

$X_B = P_B + 64 = (64)_{10} = (1000000)_2$

$B = 0|100\ 0000|\underbrace{1100}_{C}\ \underbrace{0110}_{6}\ \underbrace{1110}_{E}\ \underbrace{1001}_{9}\ \underbrace{0111}_{7}\ \underbrace{1000}_{8}$

Задание 4.

$A = 1425_{10} = 10110010001_2 = (0,10110010001)_2 \times$

$\times 2^{11}$

$X_A = P_A + 128 = (139)_{10} = (10001011)_2$

$A = 0|10001011|10110010001\ 0000000000$

$B = 0{,}777_{10} = (0, C6E978)_{16} =$

$= (0, 1100\ 1110\ 1001\ 0111\ 1000)_2 \cdot 2^0$

$X_B = P_B + 128 = (128)_{10} = (10000000)_2$

$B = 0|10000000|11001110100101111000000$

Задание 5.

$A = 1425_{10} = 10110010001_2 = (1{,}0110010001)_2 \cdot 2^{10}$

$X_A = P_A + 127 = (137)_{10} = (10001001)_2$

$A = 0|10001001|01100100010000000000000$

$B = (0{,}777)_{10} = (0,1100\ 1110\ 1001\ 0111\ 1000)_2 =$

$= (1{,}1001110\ 1001\ 0111\ 1000)_2 \cdot 2^{-1}$

$X_B = P_B + 127 = (126)_{10} = (1111110)_2$

B = 0|01111110|10011101001011110000000

R = 43230100 S = BF910000

Задание 6.

R = (0100 0011 0010 0011 0000 0001 0000 0000)$_2$ =

= 0|100 0011|0010 0011 0000 0001 0000 0000

$X_Y = 67 = 64 + 3$

$P_Y = 67 - 64 = 3$

$Y = (0,2301)_{16} \cdot 16^3 = (230,1)_{16} = (2 \cdot 16^2 + 3 \cdot 16^1 + 1 \cdot 16^{-1}) =$

$= (512 + 48 + \frac{1}{16}) = (0,0625 + 560) = (560,0625)_{10}$

S = (1011 1111 1001 0001 0000 0000 0000 0000)$_2$ =

= 1|011 1111|1001 0001 0000 0000 0000 0000

$X_Z = 63$

$P_Z = 63 - 64 = -1$

$Z = -(0,091)_{16} \cdot 16^{-1} = -(0,091)_{16} = -(0 \cdot 16^{-2} + 1 \cdot 16^{-3}) =$

$= -\left(\frac{9}{256} + \frac{1}{4096}\right) = -\frac{145}{4096} \approx -0,0354_{10}$

Задание 7.

R = (0100 0011 0010 0011 0000 0001 0000 0000)$_2$ =

= 0|100 0011 0|010 0011 0000 0001 0000 0000

$X_V = 134 = 128 + 6$

$P_V = 6$

$V = (0,1010\,0011\,0000\,0001)_2 \cdot 2^6 =$

$= (1010\,00,11\,0000\,0001)_2 = 2^5 + 2^3 + 2^{-1} + 2^{-2} +$

$+ 2^{-10} = 32 + 8 + \frac{1}{2} + \frac{1}{4} + \frac{1}{1024} \approx 40,7509_{10}$

$S = (1011\,1111\,1001\,0001\,0000\,0000\,0000\,0000)_2 =$

$= 1\,011\,1111\,1|001\,0001\,0000\,0000\,0000\,0000$

$X_w = 127$

$P_w = 127 - 128 = -1$

$W = -(0,10010001)_2 \cdot 2^{-1} = -(0,01001001)_2 =$

$= -(2^{-2} + 2^{-5} + 2^{-9}) \approx -0,2832_{10}$

Задание 8.

$R = (0100\,0011\,0010\,0011\,0000\,0001\,0000\,0000)_2 =$

$= 0|100\,0011\,0|010\,0011\,0000\,0001\,00000000$

$X_T = 134$

$P_T = 134 - 127 = 7$

$T = (1,0100\,0110\,0000\,0001)_2 \cdot 2^7 =$

$= (1010\,0011,0000\,0001)_2 = 2^7 + 2^5 + 2^1 + 2^0 + 2^{-8} \approx$

$\approx 163,0039_{10}$

$S = (1011\ 1111\ 1001\ 0001\ 0000\ 0000\ 0000\ 0000)_2 =$

$= 1\,|\,011\ 1111\ 1\,|\,001\ 0001\ 0000\ 0000\ 0000\ 0000$

$X_Q = 127$

$P_Q = 127 - 127 = 0$

$Q = -(1,0010001)_2 \cdot 2^0 = -(1 + 2^{-3} + 2^{-7}) = -(1 + \frac{1}{8} + \frac{1}{128}) \approx$

$\approx -1,1328_{10}$