2

#04.01.00

Morse code allows you to encode characters for messages on the radio by specifying a combination of dots and dashes. How many different characters can be encoded using Morse code of at least four and no more than five signals (dots and dashes)?

A) 16

B) 48

C) 32

D) 64

E) 256

3

#04.01.00

Morse code allows you to encode characters for messages on the radio by specifying a combination of dots and dashes. How many different characters can be encoded using Morse code of at least three and no more than four signals (dots and dashes) ?

A) 8

B) 16

C) 32

D) 24

E) 64

4

#04.01.00

The chessboard consists of 8 columns and 8 lines.

What is the minimum number of bits required to encode the coordinates of one chess cell?

A) 8

B) 64

C) 16

D) 1

E) 6

5

#04.01.00

Some signaling device transmits one of three signals in one second.

How many different messages can you send in five seconds using this device ?

A) 3

B) 5

C) 125

D) 243

E) 15

6

#04.01.00

Some alphabet contains 4 different symbols. How many three-letter words can be composed of the symbols of this alphabet, if the symbols in the word can be repeated?

A) 4

B) 16

C) 64

D) 12

E) 81

7

#04.01.00

Some alphabet contains three different letters. How many three-letter words can be composed of the letters of the alphabet (the letters in the word can be repeated)?

A) 3

B) 27

C) 9

D) 729

E) 6

8

#04.01.00

Some alphabet contains three different letters. How many four-letter words can be made up from the letters of the alphabet ( the letters in the word can be repeated)?

A) 81

B) 64

C) 12

D) 16

E) 9

9

#04.01.00

The light panel consists of light bulbs. Each light bulb can be in one of three states ("on", "off" or "flashing"). What is the smallest number of bulbs that should be on the light panel so that it can transmit 18 different signals ?

A) 18

B) 6

C) 9

D) 54

E) 3

10

#04.01.00

How many words of length 5 can be composed of the letters E, F, A?

Each letter can enter in the word several times.

A) 125

B) 15

C) 3

D)243

E) 5

1

#05.01.00

How many different symbolic sequences of length from three to four exist in the four-letter alphabet {A, C, G, T}?

A) 64

B) 256

C) 320

D) 480

E) 512

2

#05.01.00

Some alphabet contains three different letters. How many five - letter words can be composed of the letters of the alphabet ( letters in the word can be repeated)?

A) 125

B) 243

C) 5

D) 3

E) 15

3

#05.01.00

How many bits does 8 MB have?

A) 223

B) 226

C) 8 • 106

D) 64 • 106

E) 800

4

#05.01.00

How many bits does 2 KB have?

A) 16384 bits.

B) 1024 bits.

C) 512 bits.

D) 712 bits.

E) 1024 bits.

5

#05.01.00

The meteorological station observes the humidity of the air. The result of one observation is an integer number from 0 to 100%, written using the minimum possible number of bits. The station made 800 measurements. Determine the information volume of the results of observations. ( Give the answer in bytes.)

A) 700 байт.

B) 800 байт.

C) 100 байт.

D) 1000 байт.

E) 5 байт.

6

#05.01.00

In the cycloscross ( Bicycle Crossing ) 276 athletes participate.

A special device registers the passage by each of the participants of the intermediate finish. The device records its number using the minimum possible number of bits, the same for each of the participants. What amount of memory will be used by the device, when 240 cyclists passed the intermediate finish? ( Give the answer in b ytes.)

A) 120 байт.

B) 270 байт.

C) 276 байт.

D) 240 байт.

E) 18 байт.

7

#05.01.00

The result of the conversion of number 5 from decimal system to the binary number system is

А) 101  
B) 100  
C) 110  
D) 111  
E) 11

8

#05.01.00

The result of the conversion of number 8 from decimal system to the binary number system is

А)111

В)110

С)1001

D)1000

Е)1100

9

#05.01.00

The result of the conversion of number 9 from decimal system to the binary number system is

А)1100

В)1101

С)100

D)110

Е) 1001

10

#05.01.00

The result of the conversion of number 10 from decimal system to the binary number system is

А)1010

В)1100

С)1101

D)100

Е)101

1

#06.01.00

The result of the conversion of a binary number 1000001 to the decimal number system is

A) 64

B) 636

C) 128

D) 127

Е) 65

2

#06.01.00

The result of the conversion of fractional number 0.73 from decimal system to the binary number system is

A) 0,1111 ...

B) 0,1011 ...

C) 0,1001 ...

D) 0,1101 ...

E) 0,1000

3

#06.01.00

The result of the conversion of number 115,94 from decimal system to the binary number system is

A) 1110011,11110

B) 1111111,01111

C) 1110111,0011

  D) 1101100,001

E) 1110010,00011

4

#06.01.00

Which of the following numeral systems is no positional?

A) Roman

B) decimal

C) binary

D hexadecimal

E) octal

5

#06.01.00

The result of the conversion of number 58,32 from decimal system to octal number system is

A) 72,243…

B) 71,244…

C) 71,245…

D) 71,344…

E) 71,443…

6

#06.01.00

Non positional numeral system is

A) binary system

B) octal system

C) hexadecimal numeral system

D) Roman characters

E) decimal system

7

#06.01.00

The result of the conversion of number 15 from decimal system to the binary number system is

A) 1011

B)11101

C) 1101

D) 1111

E) 10001

8

#06.01.00

The result of the conversion of number 464 from decimal system to the binary number system is

A) 111110000

B) 111010000

C) 10111000

D) 100000000

E) 1011111000

9

#06.01.00

The result of the conversion of number 25 from decimal system to the binary number system is

A) 11001

B) 11110

C) 11111

D) 11011

E) 10000

10

#06.01.00

The result of the conversion of number 5 from decimal system to the binary number system is

А) 101  
B) 100  
C) 110  
D) 111  
E) 11

1

#07.01.00

The result of the conversion of number 6 from decimal system to the binary number system is

А) 110  
B) 100  
C) 101  
D) 111  
E) 11

2

#07.01.00

The result of the conversion of number 7 from decimal system to the binary number system is

А) 110  
B) 100  
C) 101  
D) 111  
E) 11

3

#07.01.00

The result of the conversion of number 27 from decimal system to the binary number system is

A) 10011

B)1101

C) 11011

D) 11110

E) 11111

4

#07.01.00

The result of the conversion of number 35 from decimal system to the binary number system is

A) 110001

B)100011

C) 111001

D) 11111

E) 11000

5

#07.01.00

The result of the conversion of fractional number 0,15 from decimal system to the binary number system is

A) 0,00100110011…

B) 0,0001001001…

C) 0,0101011111…

D) 0,000010010…

E) 0,1111111…

6

#07.01.00

The result of the conversion of fractional number 0,69 from decimal system to the binary number system is

A) 0,11011…

B) 0,010011…

C) 0,101100…

D) 0,10111…

E) 0,1111111…

7

#07.01.00

The result of the conversion of fractional number 14,25 from decimal system to the binary number system is

A) 1110,01

B) 1111,11

C) 1011,11

D) 1111,01

E) 1000,11

8

#07.01.00

The result of the conversion of fractional number 43,32 from decimal system to the binary number system is

A) 111011,1010…

B) 101011,010100…

C) 101011,111…

D) 010100,0001…

E) 1111111,010100…

9

#07.01.00

The binary number system has a base p

A) p =2

B) p=0

C) p=1

D) p=22

E) p=11

10

#07.01.00

Depending on the method of image numbers numeral systems are divided

into

A) positional and no positional

B) Arab and Roman

C) presented in the form of a series and a digit grid

D) algorithmic and object-oriented

E) procedural and functional

#08.01.00

The result of the conversion of fractional number 63,42 from decimal system to octal number system is

A) 70,327

B) 71,723

C) 77,327

D) 77,423

E) 70,423

2

#08.01.00

The digits below are used for presentation numbers

in octal number system

A) 0-7

B) 0-8

C) 1-8

D) 8-10

E) 8-88

3

#08.01.00

The result of the conversion of number 273,54 from octal system to the binary number system is

A) 10000011,1001

B) 11111111,1011

C) 10111011,1011

D) 11111011,1011

E) 10111011,0101

4

#08.01.00

The result of the conversion of number 1216,04 from octal system to the decimal number system is

A) 654,0625

B) 644,0625

C) 654,0725

D) 634,0825

E) 654,0735

5

#08.01.00

The result of the conversion of fractional number 83,55 from decimal system to octal number system is

A) 123,4314…

B) 321,4314…

C) 123,4134…

D) 312,1432

E) 231,44114…

6

#08.01.00

The result of the conversion of fractional number 0,6875 from decimal system to octal number system is

A) 0,64

B) 0,54

C) 0,55

D) 0,56

E) 0,61

7

#08.01.00

The result of the conversion of number 380,1875 from decimal system to the binary number system is

A) 101111100,0011

B) 111111111,0011

C) 111111111,1111

D) 100001111,0011

E) 111001000,0101

8

#08.01.00

The result of the conversion of binary number 1000001 to the decimal

number system is

A) 64

B) 63

C) 128

D) 256

E) 65

9

#08.01.00

What is the decimal value of the binary number 1001

A) 7

B) 8

C) 9

D) 10

E) 11

10

#08.01.00

The base of the binary system is written as

A) 1

B) 0

C) 11

D) 01

E) 10

1

#09.01.00

What is the basis for the method for converting integer decimal numbers from one number system to another?

A) division of the converted number on the basis of a new number system

B) addition of the converted number to the base of the new number system

C) multiplication of the converted number with the basis of the new number system

D) replacing each digit of the converted number by its equivalent in the new number

system

E) calculation of the degrees of the converted number

2

#09.01.00

For presentation numbers in hexadecimal number system

A) digits 0-9 and letters А-F

B) numbers from 0 to 15

C) numbers from 0 to 16

D) the first 16 letters of the Latin alphabet

E) numbers from 1 to 16

are used .

3

#09.01.00

What is the decimal value of the hexadecimal number 4016?

A) 24

B) 56

C) 64

D) 96

E) 128

4

#09.01.00

The result of the conversion of binary number 1111010101,11 to the

hexadecimal number system is

A) 35,С

B) 3Е8,1

C) 37,А

D) 3В,3

E) ВАЕ,F

5

#09.01.00

The result of the conversion of hexadecimal number 29А,5(16) to the

decimal number system is

A) 432,4425

B) 666,3125

C) 712,5856

D) 999,4546

E) 821,3125

6

#09.01.00

Choose the correct order of increasing storage units

A) megabytes, bytes, kilobytes, gigabytes

B) bytes, kilobytes, megabytes, gigabytes

C) bytes, megabytes, kilobytes, gigabytes

D) kilobytes, gigabytes, megabytes, bytes

E) kilobytes, bytes, gigabytes, megabytes

7

#09.01.00

Convert the binary number 111110110 to hexadecimal number system

A) 1F6

B) 2C3

C) FF3

D) D21

E) F16

8

#09.01.00

Convert the binary number 1000001 to hexadecimal number system

A) 34

B) 44

C) 41

D) 24

E) 42

9

#09.01.00

Convert the binary number 010000010 to hexadecimal number system

A) 38

B) 28

C) 63

D)82

E) 51

10

#09.01.00

Convert the binary number 1100010 to hexadecimal number system

A) 32

B) 42

C)52

D)62

E) 72

11

#09.01.00

Convert the binary number 111000111 to hexadecimal number system

A) 1C7

B) 2C3

C) 3F2

D) 1F4

E) 1A2

1

#10.01.00

There are 4 integers written in the binary system:

10001011; 10111000; 10011011; 10110100.

How many of them are numbers larger than 9A16?

A) 1

B) 3

C) 0

D) 4

E) 2

2

#10.01.00

Specify an integer from 8 to 11, the binary record of which contains exactly two units.

If there are several such numbers, indicate the largest of them.

A) 8

B) 9

C) 10

D) 11

E) There is no such number

3

#10.01.00

There are 4 integers written in different number systems:

3110, F116, 261**8** , 711**8**

How many of them are numbers, the binary record of which contains exactly 5 units?

A) 2

B) 4

C) 1

D) 3

E) There is no such number

4

#10.01.00

How many units are in the binary entry of the octal number 17318?

A) 1

B) 5

C) 6

D) 4

E) 7

5

#10.01.00

How many units are in the binary record of the hexadecimal number 12F016?

A) 6

B) 4

C) 2

D) 5

E) 1

6

#10.01.00

Convert the number of В0С16  into binary number system.

A) 111101010000

B) 101100001100

C) 111000001111

D) 110100001111

E) 111111110000

7

#10.01.00

Convert the binary number 101011 to the hexadecimal number system.

A) 1C

B) 43

C) 2B

D) 3D

E) 72

8

#10.01.00

Convert the binary number 110110 into the octal number system.

A) 23

B) 77

C) 11

D) 66

E) 44

9

#10.01.00

Solve the equation: 121x + 110 = 1017

Write the answer in the ternary system ( the base of the number system in the answer is not needed to write).

A) 6

B) 11

C) 12

D) 2

E) 20

10

#10.01.00

Solve the equation: 121*x* + 110 = 1019.

A) 8

B) 11

C) 7

D) 1

E) 2

1

#11.01.00

Solve the equation: 224*x* + 110 = 1018.

A) 4

B) 5

C) 6

D) 7

E) 8

2

#11.01.00

Solve the equation: 101x + 1310 = 101х+1

A) 4

B) 5

C) 6

D) 7

E) 8

3

#11.01.00

In the number system with some basis, the decimal number 18 is written as 30.

Specify this basis.

A) 3

B) 4

C) 5

D) 6

E) 7

4

#11.01.00

In the number system with some basis, the decimal number 70 is written as 77.

Specify this basis.

A) 16

B) 5

C) 7

D) 3

E) 9

5

#11.01.00

In the number system with some basis, the decimal number 71 is written as 78.

Specify this basis.

A) 9

B) 8

C) 16

D) 2

E) 7

6

#11.01.00

In the number system with some basis, the decimal number 80 is written as 62.

Specify this basis.

A) 8

B) 13

C) 2

D) 16

E) 12

7

#11.01.00

In the number system with some basis, the decimal number 77 is written as 52.

Specify this basis.

A) 8

B) 2

C) 15

D) 16

E) 13

8

#11.01.00

In the number system with some basis, the decimal number 12 is written as 30.

Specify this basis.

A) 2

B) 16

C) 8

D) 4

E) 15

9

#11.01.00

In the number system with some basis, the decimal number 27 is written as 30.

Specify this basis.

A) 2

B) 4

C) 8

D) 16

E) 9

10

#11.01.00

Solve the equation: 101N+1 = 101N + 158

Write the answer in decimal numeral system.

A) 6

B) 2

C) 4

D) 16

E) 8