Que Network connection lost. (Autosave failed).

No y value.

Make a note of any responses entered on this page in the last few minutes, then try to re-connect.

Ma

Once connection has been re-established, your responses should be saved and this message will disappear.

$$110101110$$

Question **2**

Not yet answered

Marked out of 1.00

Convert the octal value 0167_8 to binary assuming a 10-bit word. Enter the value as a binary value.

119

Your last answer was interpreted as follows:

$$119$$

Question **3**

Not yet answered

Marked out of 1.00

Evaluate the arithmetic right shift of the binary number 110101_2 >> 1 assuming a 6-bit word. Enter the value as a binary value.

111010

Your last answer was interpreted as follows:

$$111010$$

Question **4**

Not yet answered

Marked out of 1.00

Evaluate the logical right shift of the binary number 1001001000_2 >> 5 assuming a 10-bit word. Enter the value as a binary value.

0000010010

Your last answer was interpreted as follows:

$$10010$$

Question **5**

Not yet answered

Marked out of 1.00

Evaluate the left shift of the binary number 01110100_2 << 2 assuming a 8-bit word. Enter the value as a binary value.

11010000

Your last answer was interpreted as follows:

$$11010000$$

Question **6**

Not yet answered

Marked out of 1.00

Evaluate the bitwise OR of

0000111010_2
1001000100_2
assuming a 10-bit word. Enter the value as a binary value.

1001111110

Your last answer was interpreted as follows:

10

Question **7**

Not yet answered

Marked out of 1.00

Evaluate the bitwise XOR of

011000_2
011111_2
assuming a 6-bit word. Enter the value as a binary value.

000111

Question **8**

Not yet answered

Marked out of 1.00

Convert the 5-bit unsigned value 11000_2 to a base 10 (decimal) number. You may enter an expression if you wish.

24

Question **9**

Not yet answered

Marked out of 1.00

Convert the decimal number 5_{10} to an unsigned 4-bit binary value.

0101

Question **10**

Not yet answered

Marked out of 1.00

Consider a 6-bit floating-point representation based on the IEEE floating-point format, with one sign bit, 2 exponent bits and 3 fraction bits. The exponent bias follows the IEEE standard.

Interpret the bitstring $1\_00\_010_2$ using this 6-bit floating-point representation and fill in the table below.

You must express your results precisely (e.g. using rationals (M/N) and exponents (M^N), rather than approximate decimal fractions such as 0.ABCD). You may use expressions if it's useful.

Field	**Mean**	**Value**
e	The value represented by considering the exponent field to be an unsigned integer (as a decimal value)	
E	The value of the exponent after biasing (as a decimal value)	
2^E	The numeric weight of the exponent (as a decimal value)	
f	The value of the fraction (as a fraction such as 3/4 or the exact floating point number)	
M	The value of the significand (as a fraction such such as 7/4 or the exact floating point number)	
$s*2^E * M$	The value of the number in decimal. The 's' is equal to +1 if the number is positive and -1 if it is negative.	

Question **11**

Not yet answered

Marked out of 1.00

Consider a 12-bit floating-point representation based on the IEEE floating-point format, with one sign bit, 6 exponent bits and 5 fraction bits. The exponent bias follows the IEEE standard.

Interpret the bitstring $0\_010010\_00010_2$ using this 12-bit floating-point representation and fill in the table below.

You must express your results precisely (e.g. using rationals (M/N) and exponents (M^N), rather than approximate decimal fractions such as 0.ABCD). You may use expressions if it's useful.

Field	**Mean**	**Value**
e	The value represented by considering the exponent field to be an unsigned integer (as a decimal value)	
E	The value of the exponent after biasing (as a decimal value)	
2^E	The numeric weight of the exponent (as a decimal value)	
f	The value of the fraction (as a fraction such as 3/4 or the exact floating point number)	
M	The value of the significand (as a fraction such such as 7/4 or the exact floating point number)	
$s*2^E * M$	The value of the number in decimal. The 's' is equal to +1 if the number is positive and -1 if it is negative.	

Question **12**

Not yet answered

Marked out of 1.00

Consider a 10-bit floating-point representation based on the IEEE floating-point format, with one sign bit, 4 exponent bits and 5 fraction bits. The exponent bias follows the IEEE standard.

Convert the decimal floating point number 0.001953125 (or $\frac{1}{512}$) to the appropriate IEEE representation. Enter the binary representation of each field (sign, exp, fraction)

s	e	f

Question **13**

Not yet answered

Marked out of 1.00

Consider a 10-bit floating-point representation based on the IEEE floating-point format, with one sign bit, 4 exponent bits and 5 fraction bits. The exponent bias follows the IEEE standard.

Convert the decimal floating point number -0.140625 (or $-\frac{9}{64}$) to the appropriate IEEE representation. Enter the binary representation of each field (sign, exp, fraction)

s	e	f

Question **14**

Not yet answered

Marked out of 1.00

Consider a 9-bit floating-point representation based on the IEEE floating-point format, with one sign bit, four exponent bits (k = 4), and four fraction bits (n = 4). The exponent bias is $2^{4-1}-1 = 7$.

In this exercise you need to multiply 2 floating point numbers. We outline the algorithm (for floating point multiplication) at each step--- you need to carefully carry out each step that requires filling out the given blanks.

Assuming the given 9-bit IEEE floating-point format, multiply X = 29 and Y = 0.15625.

1) First covert X and Y to their bit representations. **Please specify the bit pattern within double quotation marks and without a space. (E.g.: "011100010")**

	Bit Pattern
X	
Y	

2) Using the binary representations convert X and Y to **scientific form**--- i.e., express these values as **1.(*mantissa_part*)* 2 ^** (*exponent*) **where ^ represents "raised to". You need to fill out the *mantissa_part* and the *exponent*.**

The *mantissa_part* should be given as binary (Please specify the bit pattern within double quotation marks and without a space). The *exponent* part should be entered as a decimal value.

[Note that 1.(*mantissa_part*) or 0.(*mantissa_part*) is referred to as the *mantissa*.]

X = **1.** ____ *** 2 ^** ____

Y = **1.** ____ *** 2 ^** ____

3) Now add the two exponents (you found these in the previous question). Write your answer in decimal for now.

Y =

4) Multiply the two mantissas (not just *mantissa_part* !) of X and Y from step 2 together--- give the result of just that multiplication below.

[**Note: The first blank below is the bit pattern of the result before the decimal point. Please include the double quotation marks and no spaces. For second blank, please specify the bit pattern within double quotation marks and without a space.**]

Z = (X * Y) = . ** 2 ^ (exponent from step 3)*

5) If the result before the decimal point is greater than 1, adjust the mantissa and exponent so that it is.

Z = 1. ** 2 ^*

6) To get the new sign bit, add the 2 original sign bits together, divide by 2 and take the remainder (sum of sign bits mod 2). Fill in the multiple choice question with the value of the sign bit.

Sign bit =

5) Convert Z to 9-bit floating point IEEE format. **Please specify the bit pattern within double quotation marks and without a space. (E.g.: "011100010").**

[IMP NOTE: To store result Z in 9-bit IEEE binary floating point representation--- we need to do use rounding. Please use round-to-even mode.]

Z =