① a) 5B(IEEE754 4E3M) = 22(10)

1,375

0 101 1011

S E M

1,011 . 2^{4}

10110(2) = 22

16 4 2

bias = 7

nº real = 11 − 7 = 4

b) 9,25(10) = ? (IEEE754 4E3M)

1001,01 = 1,00101 . 2^{3}

bias = $2^{4-1} - 1 = 7$

nº maquina = 7 + 3 = 10

9,25(10) = 0 1010 001 (IEEE754 4E3M)

S 1

② a) 803ACABA (IEEE754 8E23M)

1000 0000 0001 1010 1100 1011 1010

S E M

0,011 ACABA . 2^{-126}

bias = $2^{8-1} - 1 = 127$

nº real = 1 − 127 = −126

1ACABA . 2^{-148}

3.16⁵ + 10.16⁴ + 12.16³ + 10.16² + 11.16 + 10.1

−385.2986 . 2^{-179}

−5,3991833 . 10^{38}

b) 803ACABA00000000 (IEEE754-11E52M)

1000 0000 1010 CABA 0000 0000

S E

1,CABA . 2^{-1013}

bias = $2^{10} - 1 = 1023$

nº real = 10 − 1023 = −1013

1CABA . 2^{-1029}

$-\frac{117434}{2^{1029}}$

3. a) $14,125_{(10)} = 41620000$ (IEEE 8E 23M)

$1110,001 \rightarrow 1,110001 \cdot 2^3$

M

bias $= 2^{8-1} - 1 = 130$

nº de maquina $= 127 + (-3) = 124 = d1111100_{(2)}$

4 1 6 2 0 0 0 0

0 | 10000010 | 11000100000000000000000

S E M

b) $-58,375 = C2698000$ (IEEE 8E 23M)

$111010,011 = 1,11010011 \cdot 2^5$

bias $= 2^{8-1} - 1 = 127$

nº de maquina $= 127 + 5 = 132 = 10000100$

C 2 6 9 8 0 0 0

1 | 10000100 | 11010011000000000000000

S E M

4-a) 0 10000001 01100... $= 5,5_{(10)}$

bias $= 2^{8-1} - 1 = 127$ $\quad 1,011 \cdot 2^2 = 5,5_{(10)}$

nº real $= 129 - 127 = 2$

b) 1 10000001 000100... $= 4,25_{(10)}$

bias $= 2^{8-1} = 127$ $\quad -1,0001 \cdot 2^2 = -100,01 = -4,25_{(10)}$

nº real $= 129 - 127 = 2$

5) D57F0000 → negativo

SF 7FF800 - E = 10111110

7F 7FF800 E = 11111110

⑥ 112 x 0,224 = 25088.10 $1,12 \cdot 10^2 + 2,24 \cdot 10^{-1} = 112,224$

$1,110000 \rightarrow 1,110 \cdot 2^6$

0 1101 110 ⇝ $112_{(10)}$ err = 0

nº bias = $2^3 - 1 = 7$ err rel = 0%

nº mag = 6 + 7 = 13

$112 \cdot 0,21875 = 24,5$

$(11000,1 \rightarrow 1,1001 \cdot 2^4$ (24) err = 1,088 err rel = 4,33%

$0,001110\ldots \rightarrow 1,110 \cdot 2^{-3}$

0 0100 110 ⇝ $0,21875_{(10)}$ err = 0,00525

nº bias = 7 err rel = 2,3%

nº mag = −3 + 7 = 4

$112 + 0,21875$

$1110000,\ldots \rightarrow 1,110 \cdot 2^6$ ($112_{(10)}$) err = 0,224 err rel = 0,2%

⑦ 112

$1110000 \rightarrow 1,11 \cdot 2^6$

$0,001,1100 \rightarrow 1,11 \cdot 2^{-2} \rightarrow 0,4375$

nº bias = $2^2 - 1 = 3$ err = 111,5625

nº maquina = 3 + 6 = 9 → 1001 err rel: 99,6%

$0,4375 + 0,1875 = 0,625$ err: 111,599

0,101 err rel: 99,4%

$0,224$

$0,00111\ldots \rightsquigarrow 1,1100\ldots \times 10^{-3}$

$0,000\ 1100 \rightarrow 0,11 \times 10^{-2} \rightarrow 0,1875_{(10)}$

nº bias = 3 err: 0,0365

nº maquina = 3 − 3 = 0 err rel: 1,6%

$0,4375 \cdot 0,1875 \cong 0,08203$

$0,00010100\ldots \rightarrow 1,01 \cdot 10^{-4}$

3 + −4 = −1 Err NaN