

a)

$$A = (172)_{10}$$

$172/2 = 86$	resto 0 $\Rightarrow b_0 = 0$
$86/2 = 43$	resto 0 $\Rightarrow b_1 = 0$
$43/2 = 21$	" 1 $\Rightarrow b_2 = 1$
$21/2 = 10$	" 1 $\Rightarrow b_3 = 1$
$10/2 = 5$	" 0 $\Rightarrow b_4 = 0$
$5/2 = 2$	" 1 $\Rightarrow b_5 = 1$
$2/2 = 1$	" 0 $\Rightarrow b_6 = 0$
$1/2 = 0$	" 1 $\Rightarrow b_7 = 1$

$$\therefore (172)_{10} = (1010\ 1100)_2$$

$$(172)_{10} = (1010\ 1100)_2 \times 2^0 = (1.010\ 1100)_2 \times 2^7$$

$$e = 7 \Rightarrow E = 7 + 127 = (134)_{10}$$

$$(134)_{10} = (1000\ 0110)_2$$

Como  $(172)_{10}$  es positivo,  $s = 0$

$$\therefore (172)_{10} = \overset{s}{0} \overset{E}{1000} 0011 010\ 1100\ 0000\ 0000\ 0000\ 0000 \Bigg)_{IEEE\ 754\ s.p.}$$

$$B = (10.75)_{10}$$

$$(10)_{10} = (1010)_2 ; (0.75)_{10} = (0.11)_2$$

$$\therefore (10.75)_{10} = (1010.11)_2$$

$$(10.75)_{10} = (1010.11)_2 \times 2^0 = (1.010\ 11)_2 \times 2^3$$

$$e = 3 \Rightarrow E = 3 + 127 = (130)_{10}$$

$$(130)_{10} = (1000\ 0010)_2 ; s = 0 \text{ pues } (10.75)_{10} \text{ es positivo}$$

$$\therefore (10.75)_{10} = \overset{s}{0} \overset{E}{1000} 0001 010\ 1100\ 0000\ 0000\ 0000\ 0000 \Bigg)_{IEEE\ 754\ s.p.}$$

NOTA:

$$P = A \times B$$

Ambos operandos son normalizados

$$e_A = 7, e_B = 3 \Rightarrow e_P = 10$$

$$\begin{array}{r}
 1.010\ 1100 \dots 0 \times 2^7 \\
 \times 1.010\ 1100 \dots 0 \times 2^3 \\
 \hline
 0000\ 0000 \dots 0 \\
 1010\ 1100 \dots 0 \\
 10101\ 100 \dots 0 \\
 000\ 0000\ 00 \dots 0 \\
 1101\ 0110\ 0 \dots 0 \\
 0000\ 0000 \dots 0 \\
 10101\ 100 \dots 0 \\
 \hline
 1.1100\ 1110\ 0100\ 0000 \dots 0 \times 2^{10}
 \end{array}$$

Queda:

$$1.110\ 0111\ 0010\ 0000 \dots \times 2^{10}$$

$$E = 10 + 127 = (137)_{10} = (1000\ 1001)_2$$

$$\therefore P = (0'100\ 0100\ 1'110\ 0111\ 0010\ 0000\ 0000\ 0000)_{IEEE\ 754}$$

c) Para doble precisión (64 bits):

$$E = 10 + 1023 = (1033)_{10} = (100\ 0000\ 1001)_2$$

$$\therefore P = (0'100\ 0000\ 1001\ 1100\ 1110\ 0010 \dots 0000)_{IEEE\ 754}$$

64 bits: 1 bit signo, 11 bits exponente c/ sesgo y 52 bits fracción d. p.

d) El resultado es correcto:

$$(1.110\ 0111\ 001)_2 = \left( \frac{1849}{1024} \right)_{10}$$

$$1849 \times 2^{10} = 1849 \times 1024 = 1772 \times 10^3$$

NOTA: