(ا)

① 22.004

* 22.004 → 10110 . 0000000001000 =

00000001000 → $= 1.0110000000001000 \times 2^4$

10110

sign = 0

---

* -0.0103 → -0.0000010101×2^0

00000010101

0

sign = 1

decimal	sign	E	F (11 bits)	دقيق
22.004	0	0100	01100000000/1000	بت (بتمام ت)
-0.0103	1	0000	000000 10101	بت

(ب)

* -13.33 → -001101.010101

001101 → 0.010101

---

* 18.51 → $+010010.100000$

→ 0.100000

010010

decimal	sign	6 bit	6 bit	دقيق
-13.33	1	001101	010101	بت
+18.51	0	010010	100000	بت

(2)

$11001_2 = 1 + 8 + 16 = 25$

+ $11001.0001_2 \longrightarrow 0.0001_2 = \frac{1}{16} = 0.0625$

$\Rightarrow 25.0625$

+ $(19.1)_{16} \longrightarrow 19_{16} = 9 \times 1 + 16 = 25$

$0.1_{16} = \frac{1}{16} = 0.0625$

$\Rightarrow 25.0625$

+ $(31.01)_8 \longrightarrow 31_8 = 1 \times 1 + 3 \times 8 = 25$

$0.01_8 = \frac{1}{16} = 0.0625$

$\Rightarrow 25.0625$

(3)

$(-1)^S \times 1.F \times 2^E \rightarrow S, F, E$

$E = \sum_{i=24}^{30} 2^{i-24} \times b_i$

24 bit: 0 1 2 — 23 → F

7 bits: 24 25 — 30 → E

1 bit: 31 → S

$2^{E-64} \times (2 \times b_{31} - 1) \times \sum_{i=0}^{23} \overline{b_i} \times 2^{i-12}$

$2b_{31} - 1$

+ min:

$E = E_{min}$ $\rightarrow 1.2^{E_{min}} = e$

$F = 0.000 — 00$

smallest: + 0000000.000 — 01 = 0.0000000596046448 — ≃ 0.00000006

---

largest: 1111111. 1111 — 11

127 → 0.99999988079071044

largest = 127.99999988079071044

Scanned with CamScanner

④

مقسوم = 1011 0100 1011 0100 = 46 260

مقسوم علیه = 11000010 = 194

B' = 0011 1101

n	E	R	A	B	
8	0	1011 0100	1011 0100	1100 0010	
		1111 0010	1011 0100		R+B'+1
	1	1011 0100	1011 0100		overflow نداریم (2 F) R = R+B
	1	0110 1001	0110 100–		SHL
	0	1010 0111	0110 1001		ER = R+B'+1 A_0=1
7	1	0100 1110	1101 001–		SHL
	0	1000 1100	1101 0011		ER
6	1	0001 1001	1010 011–		SHL
	0	0101 0111	1010 0111		ER
5	0	1010 1111	0100 111–		SHL
	0	1110 1101	0100 1110		ER R=R+B
	1	1010 1111	0100 1110		
4	1	0101 1110	1001 110–		SHL
	1	1001 1100	1001 1101		ER
3	1	0011 1001	0011 101–		SHL
	1	0111 0111	0011 1011		ER
2	0	1110 1110	0111 011–		SHL
	1	0010 1100	0111 0111		ER
1	0	0101 1000	1110 111–		SHL
	0	1001 0110	1110 1110		ER
	0	0101 1000	1110 1110		
0					

88 = باقی مانده

238 = خارج قسمت

46 260 ÷ 194 = 238, باقی‌مانده 88

حاصل تقسیم 46 260 بر 194 می‌شود خارج قسمت 238 با باقی مانده 88