Answer on Question#39687 – Engineering – Other

-15.25 in base-2:

The bias = $2^{k-1}-1$

Where k = 8 (exponent space)

⇨ Bias = $2^{8-1}-1 = 127$

Integral Part 15:

$15_{10} = 1111_2$

Fractional Part 0.25:

0.25 X 2 = 0.50 (remainder = 0)

0.50 X 2 = 1.0 (remainder = 1)

This derives $0.25_{10} = 0.10_2$

⇨ $15.25_{10} = 1111.10_2 = 1.11110 \text{ X } 2^3$

This concludes:

Sign = 1_2 (negative)

Exponent = bias + 3 = $127 + 3 = 130_{10} = 202_8 = 100000102$

Mantissa = 1111000_2

Hence the decimal after conversion into binary is:

1100 0001 0111 1000 is the required answer.