> *Booth's algorithm is a multiplication algorithm used for binary numbers.*

- It is not directly applicable to decimal numbers like +5 and -15.
- However, we can convert these decimal numbers to their binary representations and then apply Booth's algorithm.

Let's convert +5 and -15 to their binary representations:

+5 = 0101

-15 = 1111 (two's complement representation)

Now, let's perform the multiplication using Booth's algorithm.

Step 1: Set up the variables

A = 0101 (binary representation of +5)

B = 1111 (binary representation of -15)

Q = 0000 (accumulator for the result)

Q(-1) = 0 (previous value of the least significant bit of Q)

M = 4 (number of bits in the binary representation)

Step 2: Perform the multiplication using Booth's algorithm

Step	Operation	A	Q	Q(-1)
0	Initial values	0101	0000	0
1	A = A – B	0101	0000	0
2	Right Shift	0010	1000	0
3	A = A + B	0111	1000	0
4	Right Shift	0011	1100	0
5	A = A + B	1011	1100	0
6	Right Shift	1101	1110	0
7	A = A + B	0011	1110	0
8	Right Shift	0001	1111	1
9	A = A + B	1111	1111	1
10	Right Shift	1111	1111	1

The final result is Q = 1111 (binary), which is equal to -15 in decimal notation.

Therefore, the result of multiplying +5 and -15 using Booth's algorithm is -15.

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37. Explain signed magnitude, signed l's complement and signed 2's complement representation of numbers. Find the range of numbers in all three representations for 8 bit register.

38. If cache access time is lOOns, main memory access time is 1000 ns and the hit ratio is 0.9. Find the average access time and also define hit ratio.

39. Explain hardwired microprogrammed control unit ? What is address sequencer circuit ?

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47. Explain general register organization.

48. Compare and contrast DMA and I/O processors ?

49. Define the following: a) Flynn's taxonomy b) Replacement algorithm

50. Explain the various pipeline vector processing methods ?

51. Describe the language features for parallelism ?

52. What are different addressing modes? Explain them.

53. Explain any page replacement algorithm with the help of example ?

54. What is mapping? Name all the types of cache mapping and explain anyone in detail.

55. Explain arithmetic pipeline ?

56. Write short notes on, a) SIMD, b) Matrix multiplication c) Instruction format

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