Computer Organization Assignment-2

Solutions

Q1. Perform the one's complement signed binary addition and subtraction

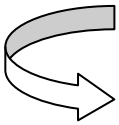
1 Mark

i) Addition

00110010 = 50

1100 0101 = -58

11110111 = **–8**



Invert to get magnitude

0000 1000

8 = 8

ii)Subtraction

0110 0101=100

-11000001 = 62

100100101

+1

00100110 = 38

Q2: Multiply the following two floating point numbers 1 Mark

$$1.110 \times 10^{10} \times 9.200 \times 10^{-5}$$

1. Add the exponents to find

$$\text{New Exponent} = 10 + (-5) = 5$$

If we add *biased* exponents, bias will be added twice. Therefore we need to subtract it once to compensate:

$$(10 + 127) + (-5 + 127) = 259$$

$$259 - 127 = 132 \text{ which is } (5 + 127) = \text{biased new exponent}$$

2. Multiply the mantissas

$$1.110 \times 9.200 = 10.212000$$

Can only keep three digits to the right of the decimal point, so the result is

$$10.212 \times 10^{5}$$

3. Normalize the result

$$1.0212 \times 10^{6}$$

4. Round it

$$1.021 \times 10^{6}$$

Q3: what are the different stages in Execution of the Little Man Computer and LMC Instruction set? 3 Marks

Refer slides and Textbook