## Floating Point Subtraction (Binary)

- 1.Align binary points:
  - Align binary point of the number with smaller exponent
- 2. Add significands:
- 3. Normalize result:
  - 4. Round and renormalize if necessary:

NB. We assumed that significands can be only 4 bits or digits.

precision format.

The we assumed that significants can be only 1 bits of digital

**Problem:** Perform binary floating-point subtraction and convert the resulting values to IEEE-754 single. Finally convert them to hexadecimal values.

## Floating Point Multiplication

- 1. Add exponents:
- 2. Multiply significands:
- 3. Normalize result:
  - 4. Round and renormalize if necessary:
  - 75. Determine the sign of result from signs of operands

NB. We assumed that significands can be only 4 digits of the significands and two digits of the exponents.

Ober any, Floating Point Multiplication (Decimal)

Consider a 4-digit decimal example:  $(1.110 \times 10^{10}) \times (9.2 \times 10^{-5})$ Floating Point Multiplication (Decimal) (themography e1 = 10 t2 = -5. e = e1 + e2 = 10-5 = 5 2. Multiply significand) 1.110 Revult = 10.212 × 105. Result = 10. 21 × 105.  $Si'9N = (+) \times (+) = +$ 

**Problem:** Perform binary floating-point multiplication and convert the resulting values to IEEE-754 single precision format. Finally convert them to hexadecimal values.

$$0.5*-0.4375$$

$$0.5 = 0.1 = 1.0 \times 2^{-1}$$

$$0.4375 = 0.0111 = 1.11 \times 2^{-2}$$

$$1. \text{ Add } exponent)$$

$$e = e1 + e2 = -1 - 2 = -3$$

$$2. \quad 0.5 = 1.000 \times 2^{-1}$$

$$0.4375 = 1.110 \times 2^{-2}$$

$$1.000$$

$$1.110$$

$$0.00$$

$$1.110$$

$$0.00$$

$$1.110$$

$$0.00$$

$$1.1110$$

$$0.00$$

$$1.1110$$

$$0.111100$$

$$0.111100$$

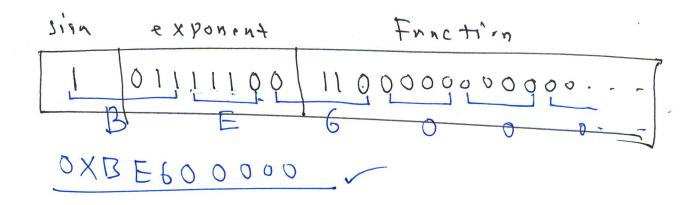
$$0.111100$$

$$0.111100$$

$$0.111100$$

$$0.111100$$

$$0.111100$$



b. Penform the following computation and convert the resulting values in IEEE-754 Single precision format.

1. 
$$e_1 = 2$$
  $e_2 = 2$   
 $e = e_1 + e_2 = 9$ .  
2.  $|\cdot| |10| \times |\cdot| |0| = |0| \cdot |11| |00|$ 

Result = 10. 1111001 X 24 3 : Wormalize = 1. 01111001 X 25.

5. sign = (-) \* (+) = (-) Ve

Sign = 1exponent =  $5 + 127 = 132_{10} = 10000100_{2}$ Fraction = 01111001