

Q.1. What is the minimum number of bits required to represent both these signed numbers in binary: +37.5 and -11.625?

Q.2. Assume that a 13-bit register is used to store signed **binary** numbers with **5-bits** for the **fraction** part of the number. What is the range of signed numbers that can be stored in this register if:

- (i) *Signed Magnitude representation is used*
- (ii) *1's complement representation is used*
- (iii) *2's complement representation is used*

Q.3. Fill the following table assuming that the above register is used. For the Hexadecimal representation, just convert the 2's complement representation to Hexadecimal:

| Representation | +73.5635 | -73.5635 | +55.4365 | -55.4365 |
|------------------|----------|----------|----------|----------|
| Signed Magnitude | | | | |
| 1's Complement | | | | |
| 2's Complement | | | | |
| Hexadecimal | | | | |

Q.4. Perform the following operation using the specified representation. Also indicate whether the result is positive, negative or overflow:

(i) $(+73.5635) - (+55.4365)$ *Using 1's Complement*

(ii) $(-55.4365) + (-73.5635)$ *Using 2's Complement*