# L1 Data Representation Quiz ANS

1. Which hex digit corresponds to the 4-bit pattern 1101?
   A. 0xB
   B. 0xC
   C. 0xD
   D. 0xE
   ANS:

2. Convert $10110_2$ to decimal:
   A. 20
   B. 22
   C. 18
   D. 26
   ANS:

3. In a 5-bit system, adding 28 and 6 sets which condition?
   A. No flags set
   B. Carry flag set
   C. Overflow flag set
   D. Zero flag set
   ANS:

4. In a 5-bit system, 3 − 5 results in which carry/borrow status?
   A. Carry=1 (Borrow=0)
   B. Carry=0 (Borrow=1)
   C. Carry=1 (Borrow=1)
   D. Carry=0 (Borrow=0)
   ANS:

5. On ARM Cortex-M3, the borrow and carry flags relation is:
   A. Carry = Borrow
   B. Carry = NOT Borrow
   C. Borrow always 0
   D. Carry always 0
   ANS:

6. In two's complement, TC(x) can be obtained by:
   A. Invert bits
   B. Invert bits and subtract one
   C. Invert bits and add one
   D. Add one then invert bits
   ANS:

7. In 5-bit two's complement, which statement is true about −16 ($10000_2$)?
   A. Its two's complement is $00000_2$
   B. Its two's complement is itself
   C. It cannot be represented
   D. It equals +16
   ANS:

8. Signed overflow can occur when:
   A. Adding operands with different signs
   B. Subtracting operands with the same sign

C. Adding two negatives
D. Subtracting a negative from a negative never overflows

ANS:

9. In CPSR after ADD/SUB, which flag denotes carry?
   A. N
   B. Z
   C. C
   D. V
   ANS:

10. To compute a+b for a=0b10000 and b=0b10000, software should check which flag if a,b are unsigned vs. signed, respectively?
    A. Unsigned→V, Signed→C
    B. Unsigned→C, Signed→V
    C. Unsigned→N, Signed→Z
    D. Unsigned→Z, Signed→N
    ANS:

11. The same binary addition can represent both unsigned 23+6=29 and signed −9+6=−3 because:
    A. Adder interprets sign automatically
    B. Two's complement allows the same hardware; interpretation differs in software
    C. Hardware selects mode via a pin
    D. Only subtraction shares hardware
    ANS:

12. For char str = "ARM Assembly", what must the final byte be and what is the string's size in Bytes?
    A. 0x00; 13 (includes space for NULL terminator)
    B. 0x20; 12
    C. 0x41; 13
    D. 0x79; 12 (ASCII hex code for lowercase 'y' is 0x79)
    ANS: