Question No. 1

$x = 0100$
$y = 1010$

(i) $y + x = ?$

```
  1010   (y = -6)
  0100   (x = 4)
 ------
  1110   (y+x = -2)
```

(ii) $y - x = ?$

Two's complement of x = 0100

```
  1011
 + 1
 ----
  1100
```

Now

```
  1010   (y = -6)
  1100   (x = -4)
 ------
 (1)0110  (y-x = +6)
```

discard

The answer is invalid as $-6-4 \neq +6$. So, we need more number of bits to accomodate -10 in it's range. Let's assume that the given numbers are represented in 8-bit 2's complement notation.

$$
\begin{array}{rll}
1111\ 1010 & (y = -6) \\
1111\ 1100 & (x = -4) \\
\hline
\textcircled{1}1111\ 0110 & (y - x = -10)
\end{array}
$$

discard