

**Question 1.**

- For each of the following decimal values, give the equivalent power of 2 representation.

(i) 65536.

- $2^{16}$

(ii) 1 048576

- $2^{20}$

(iii) 512.

- $2^9$

**Question 2.**

- (i) Perform the following two's complement operation.

$$\begin{array}{r} 01001110 \\ - 11110100 \\ \hline \end{array}$$

$$\begin{array}{r} 01001110 \\ + 00001100 \\ \hline 01011010 \end{array}$$

(ii) Convert the result in (i) to the decimal base.

- $2^6 + 2^4 + 2^3 + 2^1 = 64 + 16 + 8 + 2 = 90$

(iii) Convert the result in (i) to the hexadecimal base.

- 5A

**Question 3.**

- Consider the floating-point value  $+110001.010 \times 2^0$  represented in the scientific notation. Show it in a normalized 32-bit IEEE format.

- $+1.10001010 \times 2^5$

