

1. Given a number $(164.6)_8$ where $(a)_b$ represents the number in base b , find its binary representation.

- (a) 1110100.110
- (b) 1101100.011
- (c) 0101100.110
- (d) 10110110.111

Answer: (a)

2. Given two numbers $a = (712)_8$ and $b = (511)_{10}$, where $(a)_b$ represents the number in base b , find the value of $(a + b)_2$.

- (a) 111001001
- (b) 1110010010
- (c) 1101001001
- (d) 1111001001

Answer: (d)

3. Let $A(x)$ and $B(x)$ be defined on decimal x as follows:

$$\begin{aligned} A(x) &= (x \bmod 4)_2 \\ B(x) &= (x \bmod 8)_2 \end{aligned}$$

Where $(a \bmod b)$ represents the remainder when a is divided by b and $(a)_b$ represents the number in base b . Given two numbers $x = 59$ and $y = 50$ the following operations are performed:

$$\begin{aligned} c &= x + y \\ d &= A(c) \\ e &= B(c) \\ f &= d + e \end{aligned}$$

Find $(f)_2$.

- (a) 1001110
- (b) 00011101

(c) 110

(d) 000

Answer: (c)