ECE213: Digital Electronics

Ajmer Singh

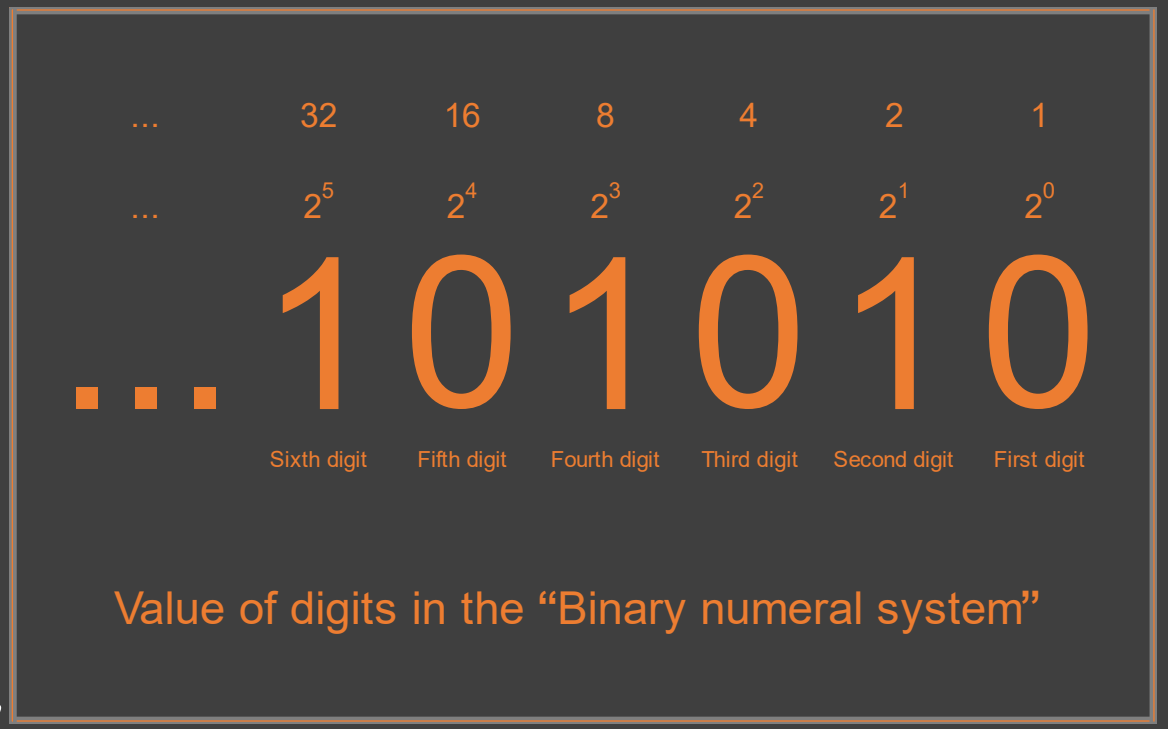
9988921373

ajmer.17381@lpu.co.in

The Course Contents

Unit I

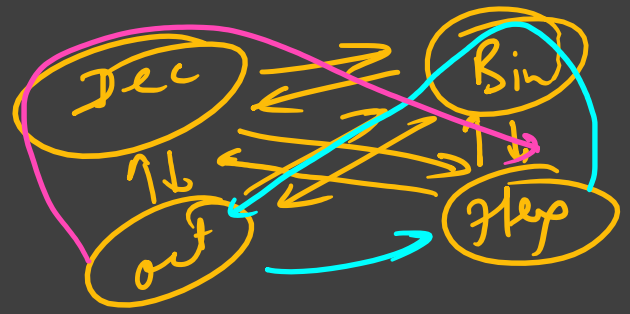
Number Systems : Digital Systems, Data representation and coding, Logic circuits, Implementation of digital systems, Number Systems, Codes- Positional number system, Binary number system, Methods of base conversions, Binary arithmetic, Representation of signed numbers, Fixed numbers, Binary coded decimal codes, Gray codes, Error detection code, Parity check codes, octal number system, Hexadecimal number system, Error correction code, Hamming code, Octal arithmetic, Hexadecimal arithmetic, Floating point numbers



Value of digits in the “Binary numeral system”

Number Systems

MCQ



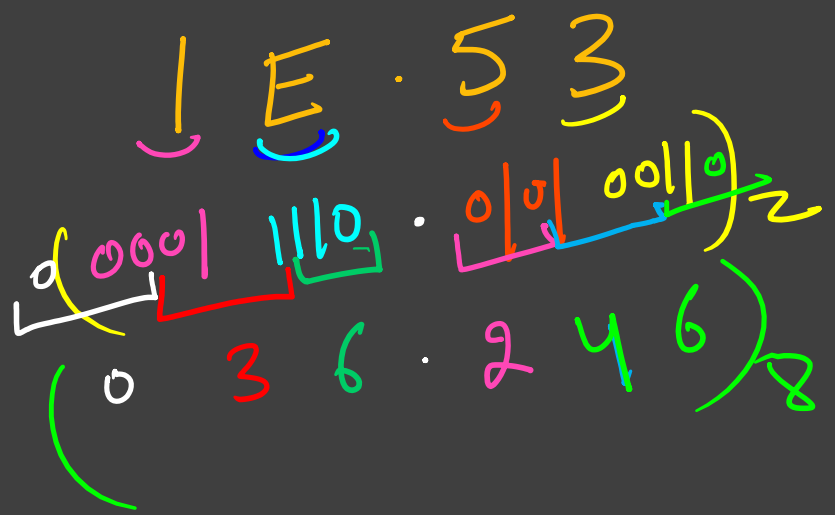
The given hexadecimal number (1E.53)16 is equivalent to _____

a) (35.684)8

b) (36.246)8

c) (34.340)8

d) (35.599)8



Number Systems

MCQ

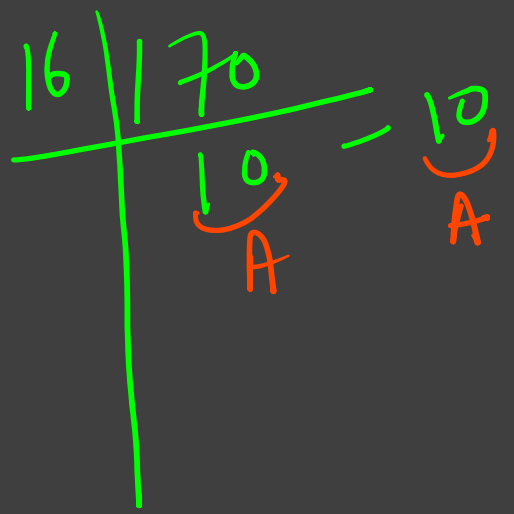
(170)10 is equivalent to _____

a) (FD)16

b) (DF)16

c) (AA)16

d) (AF)16



Number Systems

MCQ

Convert the binary number (01011.1011)2 into decimal.

a) (11.6875)10

b) (11.5874)10

c) (10.9876)10

d) (10.7893)10

01011.1011

$2^4\ 2^3\ 2^2\ 2^1\ 2^0 . 2^{-1}\ 2^{-2}\ 2^{-3}\ 2^{-4}$

$0+8+0+2+1+0.5+0+0.125+0.0625$

Number Systems

MCQ

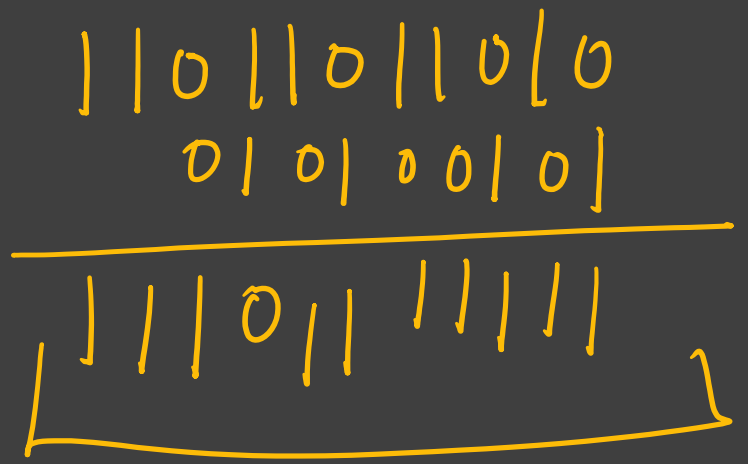
What is the addition of the binary numbers 11011011010 and 010100101?

a) 0111001000

b) 1100110110

c) 11101111111

d) 10011010011

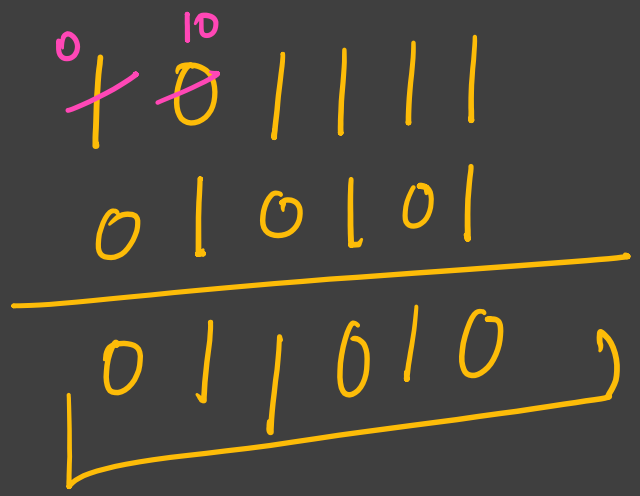


Number Systems

MCQ

Perform binary subtraction: 101111 – 010101 = ?

a) 100100
b) 010101
c) 011010
d) 011001



Number Systems

MCQ

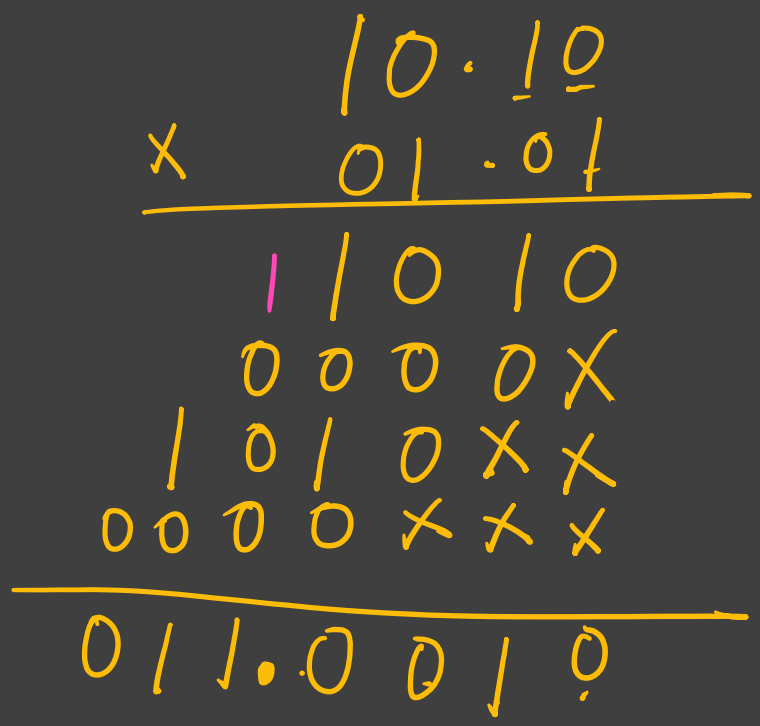
On multiplication of (10.10) and (01.01), we get _____

a) 101.0010

b) 0010.101

c) ~~011~~.0010

d) 110.0011



Number Systems

MCQ

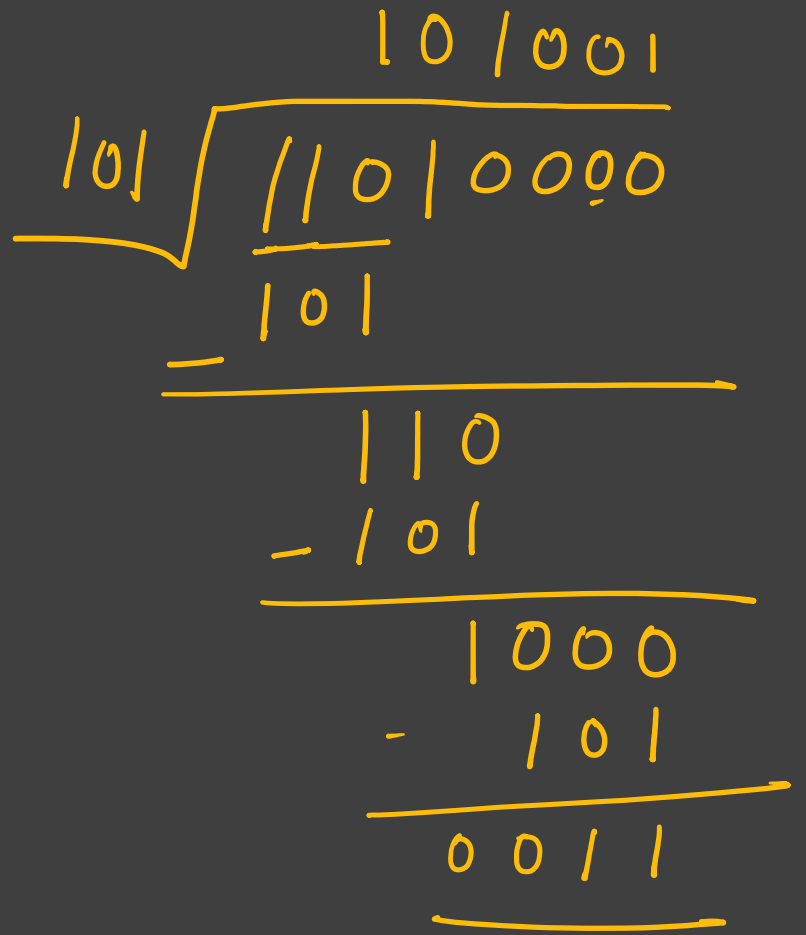
Divide the binary number (011010000) by (0101) and find the quotient.

a) 100011

b) 101001

c) 110010

d) 010001



Number Systems

Arithmetic - Multiplication

Hex

$$\begin{array}{r} 8F \\ \times\ 0A24 \\ \hline 3C \\ \hline 26070 \\ \hline \end{array}$$

$$\begin{array}{r} {\scriptstyle 1}78 \\ +\ F \\ \hline 87 \\ {\scriptstyle 1}258 \\ \times\ 8 \\ \hline 2608 \end{array}$$

$3C \times 1 = 3C$

$3C \times 2 = 78$

$3C \times 3 = B4$

$3C \times 4 = F0$

$3C \times 5 = 12C$

$3C \times 6 = 168$

$3C \times 7 = 1A4$

$3C \times 8 = 1E0$

$3C \times 9 = 21C$

$3C \times A = 258$

$3C \times B$

$3C \times F$

Number Systems

Arithmetic - Division

oct

Ex

$$
\begin{array}{r|l}
31 & 7321.00 \\
\hline
 & 227.56 \\
 & 62 \\
\hline
 & 112 \\
 & 62 \\
\hline
 & 301 \\
 & 257 \\
\hline
 & 220 \\
 & 175 \\
\hline
 & 230
\end{array}
$$

31×1	$= 31$
31×2	$= 62$
31×3	$= 113$
31×4	$= 144$
31×5	$= 175$
31×6	$= 296$
31×7	$= 257$
31×10	$= 310$

Number Systems

Arithmetic - Division

Hex

Ex $\frac{A3C}{2A}$

$2A \times 1 = 2A$
$2A \times 2 = 54$
$2A \times 3 = 7E$
$2A \times 4 = A8$
$2A \times 5 = D2$
$2A \times 6 = FC$
$2A \times 7 = 126$
$2A \times 8 = 150$
$2A \times 9 = 17A$
$2A \times A = 1A4$
$2A \times B = 1CE$
$2A \times C = 1F8$
$2A \times D = 222$
$2A \times E = 24C$
$2A \times F = 276$
$2A \times 10 = 2A0$