

Questions

Decimal to Binary

1. Convert 251025₁₀ to binary.
2. Convert 431043₁₀ to binary.
3. Convert 781078₁₀ to binary.

Octal to Binary

4. Convert 787₈ to binary.
5. Convert 25825₈ to binary.
6. Convert 3478347₈ to binary.

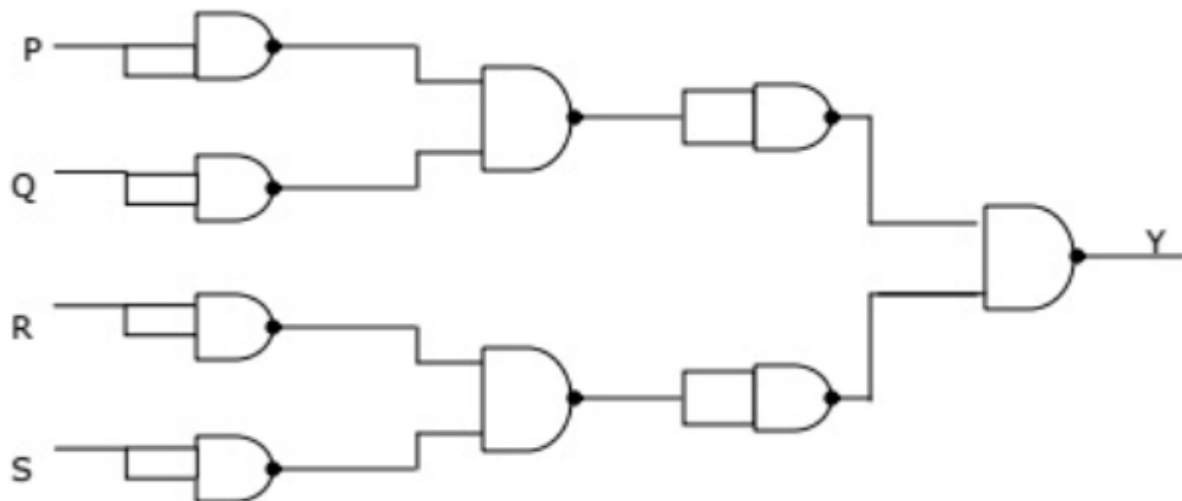
Hexadecimal to Binary

7. Convert F16F₁₆ to binary.
8. Convert 2A162A₁₆ to binary.
9. Convert B716B7₁₆ to binary.

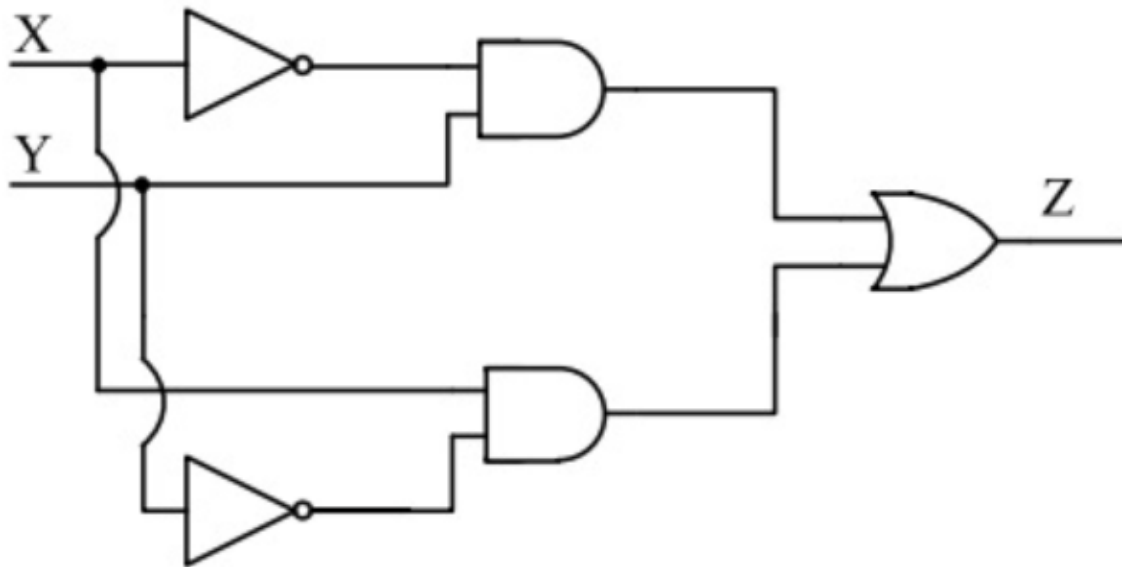
Hexadecimal to Octal

10. Convert 3F163F₁₆ to octal.
11. Convert 7A9167A9₁₆ to octal.
12. Convert C316C3₁₆ to octal.

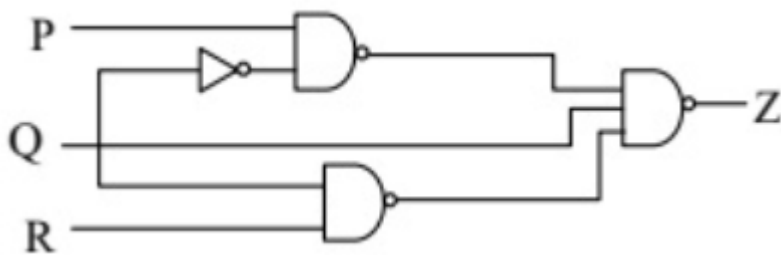
13. For the circuit shown in figure, the Boolean expression for the output Y in terms of inputs P, Q, R and S is



14. In the circuit shown below, X and Y are digital inputs, and Z is a digital output. The equivalent circuit is a



15. For a 3-input logic circuit shown below, the output Z can be expressed as



16.

Digital input signals A,B,C with A as the MSB and C as the LSB are used to realize the Boolean function

$F = m_0 + m_2 + m_3 + m_5 + m_7$, where m_i

denotes the i^{th} minterm. In addition, F has a don't care for m_1 . The simplified expression for F is given by

17.

The output expression for the Karnaugh map shown below is

		PQ			
		00	01	11	10
RS	00	0	1	1	0
	01	1	1	1	1
	11	1	1	1	1
	10	0	0	0	0

18.

Simplified form of the Boolean function:

$$F(P, Q, R, S) = \bar{P}\bar{Q} + \bar{P}QS + P\bar{Q}\bar{R}\bar{S} + P\bar{Q}R\bar{S}$$

19.

The following Karnaugh map represents a function F.

F		00	01	11	10
		0	1	1	0
X	0	1	1	1	0
	1	0	0	1	0

A minimized form of the function F is

20.

$f(A,B,C,D)=\prod M(0,1,3,4,5,7,9,11,12,13,14,15)$ is a maxterm representation of a Boolean function $f(A,B,C,D)$ where A is the MSB and D is the LSB. The equivalent minimized representation of this function is

Answers

1. $25=11001225_{10} = 11001_2$
2. $43=101011243_{10} = 101011_2$
3. $78=1001110278_{10} = 1001110_2$
4. $7=11127_8 = 111_2$
5. $25=010101225_8 = 010101_2$
6. $347=0111001112347_8 = 011100111_2$
7. $F=11112F_{16} = 1111_2$
8. $2A=0010101022A_{16} = 00101010_2$
9. $B7=101101112B7_{16} = 10110111_2$
10. $3F=7783F_{16} = 77_8$
11. $7A9=1752187A9_{16} = 17521_8$
12. $C3=1438C3_{16} = 143_8$
13. $Y=(P+Q+R+S)$
14. XOR
15. $Q'+R$
16. $A'+C$
17. $QR'+S$
18. $P'S+Q'S'$
19. $X'Y'+YZ$
20. $(A+C'+D)(A'+B+D)$