

Digital Logic Design

Daily Practice Problems

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16. Which of the following Boolean Algebra rules is correct?

(a) $A \cdot \bar{A} = 1$

(b) $A + AB = A + B$

(c) $A + \bar{A} B = A + B$

(d) $A (A + B) = B$

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17. The Boolean equation $X = [(A + \bar{B})(B + C)] B$ can be simplified to

(a) $X = \bar{A} B$

(b) $X = A \bar{B}$

(c) $X = A B$

(d) $X = \bar{A} \bar{B}$

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18. Logic function $(\bar{A} + B)(A + B)$ can be reduced to:

(a) B

(b) \bar{B}

(c) A

(d) \bar{A}

19. The simplified form of the Boolean expression $AB + A(B + C) + B(B + C)$ is given by

(a) $AB + AC$

(b) $B + AC$

(c) $BC + AC$

(d) $AB + C$

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20. The expression $(X+Y)(X+\bar{Y})(\bar{X}+Y)$ is equivalent to

(a) $\bar{X}\bar{Y}$

(b) $\bar{X}Y$

(c) $X\bar{Y}$

(d) XY

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21. In Boolean algebra if $F = (A+B)(\bar{A}+C)$ then

(a) $F = AB + \bar{A}C$

(b) $F = AB + \bar{A}\bar{B}$

(c) $F = AC + \bar{A}B$

(d) $F = A\bar{A} + \bar{A}B$

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22. Which of the following expression is not correct?

(a) $X + \bar{X}Y = X$

(b) $X \cdot (\bar{X} + Y) = XY$

(c) $X + X\bar{Y} = X$

(d) $ZX + Z\bar{X}Y = ZX + ZY$

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23. What is the simplified form of the Boolean expression $T = (X+Y)(X+\bar{Y})(\bar{X}+Y)$

(a) $\bar{X}\bar{Y}$

(b) $\bar{X}Y$

(c) XY

(d) $X\bar{Y}$

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24. $(A' + B' + C')'$ is equal to

(a) $A' B' C'$

(b) ABC

(c) $A+B+C$

(d) $A'+B'+C'$

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25. The Boolean expression $(x+y)(x+z)$ is equal to
- (a) $x+z$ (b) $x+y$ (c) $x+yz$ (d) $y+xz$

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26.

Expression

$$A + \bar{A}B + \bar{A}\bar{B}C + \bar{A}\bar{B}\bar{C}D + \bar{A}\bar{B}\bar{C}\bar{D}E$$

would be simplified to

(a) $A + \bar{A}B + CD + E$

(b) $A + B + CDE$

(c) $A + BC + CD + DE$

(d) $A + B + C + D + E$

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27. **If $X\bar{Y} + \bar{X}Y = Z$ then $X\bar{Z} + \bar{X}Z$ is equal to**

(a) \bar{Y}

(b) Y

(c) 0

(d) 1

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28. **If $A = 0$ in logic expression**

$Z = [A + EF + \bar{B}C + D] \cdot [A + \bar{D}\bar{E} + \bar{B}C + \bar{D}\bar{F}]$, then

(a) $Z = 0$

(b) $Z = 1$

(c) $Z = \bar{B}C$

(d) $Z = B\bar{C}$

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29. What does the expression $AD + ABCD + ACD + \bar{A}B + A\bar{C}D + \bar{A}\bar{B}$ on minimization result into?
- (a) $A + D$ (b) $AD + \bar{A}$ (c) AD (d) $\bar{A} + D$

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30. $A + AB + ABC + ABCD + ABCDE + \dots =$

(a) 1

(b) A

(c) $A + AB$

(d) AB

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