

- 1 Which of the examples below expresses the distributive law of Boolean algebra?
- (A) $A(BC) = (AB) + C$
 - (B) $(A + B) + C = A + (B + C)$
 - (C) $A(B + C) = AB + AC$
 - (D) $A + (B + C) = AB + AC$
- 2 Which of the examples below expresses the commutative law of multiplication?
- (A) $AB = A \times B$
 - (B) $A + B = B + A$
 - (C) $AB = B + A$
 - (D) $AB = BA$
- 3 Most de-multiplexers facilitate which type of conversion?
- (A) odd parity to even parity
 - (B) decimal-to-hexadecimal
 - (C) single input, multiple outputs
 - (D) ac to dc
- 4 One application of a digital multiplexer is to facilitate:
- (A) data selector
 - (B) data generation
 - (C) serial-to-parallel conversion
 - (D) parity checking

- 5 The primary use for Gray code is:
- (A) to convert the angular position of a shaft on rotating machinery into hexadecimal code
 - (B) coded representation of a shaft's mechanical position
 - (C) turning on/off software switches
 - (D) to represent the correct ASCII code to indicate the angular position of a shaft on rotating machinery
- 6 Which of the following decimal number is equivalent to binary number 110111_2 ?
- (A) 57
 - (B) 65
 - (C) 55
 - (D) 75
- 7 Which of the following binary number is equivalent to decimal number 20 ?
- (A) 11111
 - (B) 10001
 - (C) 10101
 - (D) 10100
- 8 What is the difference between binary coding and binary coded decimal?
- (A) BCD has no decimal format
 - (B) Binary coding is pure binary
 - (C) BCD is pure binary
 - (D) Binary coding has a decimal format

- 9 The code which can represent numbers, characters and special characters are called
- (A) Alphanumeric code
 - (B) Gray code
 - (C) BCD code
 - (D) EBCDIC code
- 10 If a 3-input OR gate has eight input possibilities, how many of those possibilities will result in a HIGH output?
- (A) 8
 - (B) 1
 - (C) 2
 - (D) 7
- 11 What is the circuit number of the IC that contains four two-input AND gates in standard TTL?
- (A) 7432
 - (B) 7402
 - (C) 7404
 - (D) 7408
- 12 The logic expression for a NOR gate is _____.
- (A) $X = \overline{A + B}$
 - (B) $X = \bar{A} + B$
 - (C) $X = A + \bar{B}$
 - (D) $X = A + B$

- 13 A basic multiplexer principle can be demonstrated through the use of a :
- (A) linear stepper
 - (B) single-pole relay
 - (C) DPDT switch
 - (D) rotary switch
- 14 $A+(B+C)=(A+B)+C$ and $A.(B+C)=(A.B)+(A.C)$ are _____ and _____ law of Boolean algebra
- (A) consensus, distributive
 - (B) commutative, associative
 - (C) associative, distributive
 - (D) commutative, distributive
- 15 A binary code that progresses such that only one bit changes between two successive codes is:
- (A) Gray code
 - (B) nine's-complement code
 - (C) 8421 code
 - (D) excess-3 code
- 16 How many select lines would be required for an 8-line-to-1-line multiplexer?
- (A) 8
 - (B) 2
 - (C) 3
 - (D) 4
- 17 Most de multiplexers facilitate which type of conversion?
- (A) odd parity to even parity
 - (B) decimal-to-hexadecimal
 - (C) single input, multiple outputs
 - (D) ac to dc

- 18 Which of the following decimal number is equivalent to octal number $(125)_8$
- (A) 85
 - (B) 95
 - (C) 65
 - (D) 75
- 19 3428 is the decimal value for which of the following binary coded decimal (BCD) groupings?
- (A) 110100001101010
 - (B) 11010001001000
 - (C) 11010000101000
 - (D) 011010010000010
- 20 What is binary code of 0110 and 0111 gray code ?
- (A) 1010,0011
 - (B) 0100,0101
 - (C) 0101,0101
 - (D) 1111,0001
- 21 What is the gray code of decimal number 12 ?
- (A) 0001
 - (B) 1110
 - (C) 1010
 - (D) 1111
- 22 One of De Morgan's theorems states that $\overline{X + Y} = \bar{X} \cdot \bar{Y}$. Simply stated, this means that logically there is no difference between:
- (A) a NOR and a NAND gate with inverted input
 - (B) a NOR and an AND gate with inverted inputs
 - (C) a NAND and an OR gate with inverted inputs
 - (D) an AND and a NOR gate with inverted inputs

- 23 Simplify : $A+BC =$ _____
- (A) $A(B+C)$
 - (B) $(A.C)+(A.B)$
 - (C) $(A+B)(A+C)$
 - (D) $AB+A$
- 24 Simplify $A+0=$ _____ $A+A=$ _____ and $A+1=$ _____
- (A) A,A,A
 - (B) $A,A,1$
 - (C) $1,1,A$
 - (D) $A,A,0$
- 25 If u, apply $A=0$, $B=1$ as input and $C_i = 1$ is the carry of the previous stage in full adder circuit then $S =$ _____ and $C =$ _____
- (A) $S=1 C=0$
 - (B) $S=0 C=1$
 - (C) $S=0 C=0$
 - (D) $S=1 C=1$

26 If u apply $A = 1$, $B = 1$ as input and $B_i = 0$ is the borrow in full subtractor circuit then difference $D = \underline{\hspace{2cm}}$ and B_0 borrow out = $\underline{\hspace{2cm}}$

(A) $S = 1$ $C = 01$

(B) $D = 0$ $B_0 = 0$

(C) $D = 0$ $B_0 = 1$

(D) $D = 1$ $B_0 = 0$

27 Which of the following Octal number is equivalent to decimal number 543.26 ?

(A) $(1037.205)_8$

(B) $(1027.105)_8$

(C) $(1037.201)_8$

(D) $(1037.200)_8$

28 What is the decimal value of the hexadecimal number 3C9A?

(A) 13414

(B) 15524

(C) 15514

(D) 14414

