Exam

Name_____

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

1) The decimal number system consists of the symbols 0-10. 1) _____

2) The binary number system consists of the symbols 0 and 1. 2) _____

3) The binary number system is fundamental to all digital computers. 3) _____

4) Repeated division-by-10 can be used to convert decimal numbers to binary numbers. 4) _____

5) The decimal value of binary 1011 can be determined by solving the following expression: 5) _____
$1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0$.

6) The 1's complement of binary 10111 is 01000. 6) _____

7) The ASCII and Gray codes serve very similar purposes. 7) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

8) The highest-value single-digit value in the decimal number system is _____. 8) _____
A) 10 B) 1 C) ∞ D) 9

9) In the decimal value 4256, the weight of the numeral 2 is _____. 9) _____
A) 10×2^2 B) 10^2 C) 10^3 D) 200

10) In the decimal value 42.56, the weight of the numeral 6 is _____. 10) _____
A) 10^{-2} B) 0.06 C) 6×2^{-2} D) 10^{-1}

11) The highest decimal value that can be represented by a 4-bit binary number is _____. 11) _____
A) 15 B) 7 C) 8 D) 32

12) How many binary digits are required to count to decimal 100? 12) _____
A) 2 B) 100 C) 7 D) 3

13) What decimal number does 2^5 represent? 13) _____
A) 32 B) 25 C) 31 D) 10

14) Decimal 42 is equivalent to binary _____. 14) _____
A) 2A B) 101010 C) 01000010 D) 52

15) In binary addition, 1 + 0 = _____. 15) _____
A) 1 with a carry of 0 B) 0 with a carry of 1
C) 1 with a carry of 1 D) 0 with a carry of 0

16) In binary addition, 1 + 1 = _____. 16) _____

A) 1 with a carry of 1 B) 1 with a carry of 0

C) 0 with a carry of 1 D) 0 with a carry of 0

17) In binary addition, 10 + 11 = _____. 17) _____

A) 111 B) 21 C) 101 D) 11

18) In binary addition, 0111 + 0001 = _____. 18) _____

A) 111 B) 1110 C) 1000 D) 1001

19) In binary subtraction, 1 - 0 = _____. 19) _____

A) 0 with a borrow 0 B) 1 with a borrow of 0

C) 1 with a borrow of 1 D) 0 with a borrow of 1

20) In binary subtraction, 1 - 1 = _____. 20) _____

A) 0 with a borrow 0 B) 0 with a borrow of 1

C) 1 with a borrow of 0 D) 1 with a borrow of 1

21) In binary subtraction, 100 - 001 = _____. 21) _____

A) 10 B) 11 C) 00 D) 1001

22) Perform the following binary subtraction: 22) _____

1100 - 0111 = _____.

A) 110 B) 101 C) 010 D) 11110

23) Perform the following binary subtraction: 23) _____

101 - 11 = _____.

A) 110 B) 010 C) 001 D) 111

24) Perform the following binary subtraction: 24) _____

11011 - 111 = _____.

A) 10111101 B) 10100 C) 0011 D) 100010

25) In binary multiplication, 1 × 0 = _____. 25) _____

A) 1 B) 0

C) 0 with a carry of 1 D) 1 with a carry of 0

26) In binary multiplication, 1 × 1 = _____. 26) _____

A) 0 B) 0 with a carry of 1

C) 1 with a carry of 1 D) 1

27) In binary multiplication, 11 × 11 = _____. 27) _____

A) 1001 B) 11 C) 1111 D) 110

28) In binary multiplication, 11 × 110 = _____. 28) _____

A) 10110 B) 11001 C) 11111 D) 10010

29) In binary division, 1001 ÷ 11 = _____. 29) _____

A) 00 B) 11 C) 01 D) None of these

30) In binary division, 1000 ÷ 0100 = _____. 30) _____
A) 0010 B) 0001 C) 0100 D) None of these

31) The 1's complement of binary 101010 is _____. 31) _____
A) 010110 B) 110111 C) 010101 D) 101011

32) The 2's complement of binary 110110 is _____. 32) _____
A) 001010 B) 001001 C) 110100 D) 101010

33) All digital systems which perform arithmetic operations must indicate _____ and _____ for numbers. 33) _____
A) sign, base B) size, base
C) magnitude, base D) sign, magnitude

34) In binary systems the sign of a number is indicated by _____. 34) _____
A) using a 0 (zero) bit in front of negative numbers
B) inverting the bits if the number is negative
C) placing a negative sign in front of the number
D) including a sign bit along with the magnitude bits

35) When performing binary addition using the 2's complement method, an overflow can occur if _____. 35) _____
A) both numbers have the same magnitude
B) one number is negative and the other is positive
C) the second number is much greater than the first
D) both numbers have the same sign

36) When performing binary addition using the 2's complement method, an overflow is indicated by a(n) _____. 36) _____
A) negative sign B) incorrect sum
C) incorrect polarity D) incorrect sign bit

37) The greatest single-digit value in the octal number system equals _____. 37) _____
A) 1 B) 7 C) 8 D) 9

38) The highest single-digit value in the hexadecimal number system equals _____. 38) _____
A) 4 B) 8 C) 15 D) 0

39) Convert 1100101000110101_2 to hexadecimal. 39) _____
A) CA35 B) 530121 C) 53AC1 D) 121035

40) Convert $8B3F_{16}$ to binary. 40) _____
A) 35647 B) 1011001111100011
C) 1000101100111111 D) 011010

41) Which of the following is an invalid BCD code? 41) _____
A) 1001 B) 0011 C) 0101 D) 1101

42) Convert decimal 59.72 to BCD. 42) _____
A) 1110.11 B) 0101100101110010
C) 01011001.01110010 D) 111011

43) Which of the following is not a standard digital code? 43) _____
A) ASCII B) Gray C) ARRL D) BCD

44) Which of the following statements accurately describes the Gray code? 44) _____
A) It is used primarily for shaft position encoding.
B) It is not an arithmetic code.
C) It exhibits only a single-bit change from one value to the next.
D) All of these statements accurately describe the Gray code.

45) Which of the following is the most widely used code for computer input and output? 45) _____
A) EBCDIC B) ASCII C) parity D) Gray

46) What is the BCD form of 438 in odd parity? 46) _____
A) 1000001101000 B) 0100000110100 C) 0100001110001 D) 1010000111000

47) What is the BCD form of 735 in even parity? 47) _____
A) 0101001101110 B) 0111001101011 C) 1010100110111 D) 0011100110101

48) Which of the following is based on the division of two binary numbers? 48) _____
A) Hamming code conversion B) Gray code to decimal conversion
C) ASCII decoding D) The cyclic redundancy check (CRC)

49) The Hamming code is a(n) _____. 49) _____
A) error correction code B) an updated version of the ASCII code
C) encryption code D) octal version of the BCD code

50) The *cyclic redundancy check* is used to detect _____. 50) _____
A) operation cycles that are performed more than once
B) one-bit and two-bit data transmission errors
C) information that is repeated
D) one-bit and two-bit parity errors

Answer Key
Testname: UNTITLED2

1) FALSE
2) TRUE
3) TRUE
4) FALSE
5) TRUE
6) TRUE
7) FALSE
8) D
9) B
10) A
11) A
12) C
13) A
14) B
15) A
16) C
17) C
18) C
19) B
20) A
21) B
22) B
23) B
24) B
25) B
26) D
27) A
28) D
29) B
30) A
31) C
32) A
33) D
34) D
35) D
36) D
37) B
38) C
39) A
40) C
41) D
42) C
43) C
44) D
45) B
46) D
47) D
48) D
49) A
50) B