1. **Consider the number given by the decimal expression. 16^3 x 9 + 16^2 x 7 + 16 x 5 + 3, The number of 1's in the unsigned binary representation of the number is _____.**
   A. 8
   B. 9
   C. 10
   D. 11
2. **When two 4-bits binary number A = a_3 a_2 a_1 a_0, B = b_3 b_2 b_1 b_0 are multiplied, the digit c_1 of the product C is given by _____.**
   A. $a_0b_0+a_1b_1$
   B. $a_1b_0+a_0b_1$
   C. $a_0b_1+a_1b_0$
   D. $a_1b_1+a_1b_0$
3. **Booth's algorithm for integer multiplication gives worst performance when the multiplier pattern is**
   A. 101010...1010
   B. 100000...001
   C. 111111...1111
   D. 011111...1110
4. **Given √(224)$_r$ = (13)$_r$. the value of the radix's is**
   A. 10
   B. 8
   C. 5
   D. 6
5. **Booth's coding in 8 bits for the decimal number - 57 is**
   A. 0 - 100 + 1000
   B. 0 - 100 + 100 - 1
   C. 0 - 1 + 100 - 10 + 1
   D. 00 - 10 + 100 - 1
6. **The number 43 in 2's complement representation is**
   A. 01010101
   B. 11010101
   C. 00101011
   D. 10101011
7. **Consider the values A = 2.0 x 10^{30}, B=-2.0 X 10^{30}, C = 1.0 and the sequence what will be the values of X and Y if the following sequence of statements are carried out.**
   X: = A + B
   Y: = A + C
   X: = X + C
   Y: = Y + B
   A. X : =1.0, Y = 1.0
   B. X : =0.0, Y = 1.0
   C. X : =1.0, Y = 0.0
   D. X : =0.0, Y = 0.0
8. **The decimal value 0.25**
   A. Is equivalent to binary 0.1
   B. Is equivalent to binary 0.01
   C. Is equivalent to binary 0.00111
   D. Cannot be represented precisely in binary
9. **The 2's complement representation of the decimal value - 15 is**
   A. 1111
   B. 11111
   C. 111111
   D. 10001
10. **If 73_x (in base -x number system) is equal to 54_y, (in base-y number system), the possible values of x and y are**
    A. 8, 16
    B. 10,12
    C. 9,13
    D. 8,11
11. **Let A = 1111 1010 and B = 0000 1010 be two 8-bits 2's complement numbers. Their product in 2's complement is**
    A. 11000100
    B. 10011100
    C. 10100101
    D. 11010101
12. **The number $(123456)_8$ is equivalent to**
    A. $(A72E)_{16}$ and $(22130232)_4$
    B. $(A72E)_{16}$ and $(22131122)_4$
    C. $(A73E)_{16}$ and $(22130232)_4$
    D. $(A62E)_{16}$ and $(22120232)_4$
13. **The range of integers that can be represented by an n bit 2's complement number system is**

A. -2^{n-1} to $(2^{n-1} - 1)$
B. $-(2^{n-1} - 1)$ to $(2^{n-1} - 1)$
C. -2^{n-1} to 2^{n-1}
D. $-(2^{n-1} + 1)$ to $(2^{n-1} - 1)$

14. The hexadecimal representation of 657_8 is

A. 1AF
B. D78
C. D71
D. 32F

15. Using Booth's algorithm for multiplication, the multiplier -57 will be recorded as

A. 0-100100-1
B. 11000111
C. 0 -1 00 1000
D. 0100-1001

16. $(34.4)_8$ x $(23.4)_8$ evaluates to

A. $(1053.6)_8$
B. $(1053.2)_8$
C. $(1024.2)_8$
D. None of these

17. The addition of 4 bits, two's complement, binary number 1101 and 0100 results in

A. 0001 and an overflow
B. 1001 and no overflow
C. 0001 and no overflow
D. 1001 and an overflow

18. $(C012.25)_H$ - $(10111001110.101)_B$ =

A. $(135103.412)_o$
B. $(5644111.412)_o$
C. $(564411.205)_o$
D. $(135103.205)_o$

19. Let r denote number system radix. The only value (s) of r that satisfy the equation √121 = 11, is /are

A. Decimal 10
B. Decimal 11
C. Decimal 10 and 11
D. any value > 2

20. $(1217)_8$ is equivalent to

A. $(1217)_{16}$
B. $(028F)_{16}$
C. $(2297)_{16}$
D. $(0B17)_{16}$

21. P is a 16-bits signed integer. The 2's complement representation of P is $(F87B)_{16}$. The 2's complement representation of 8*P is

A. $(C3D8)_{16}$
B. $(187B)_{16}$
C. $(F878)_{16}$
D. $(987B)_{16}$

22. The smallest integer that can be represent by and 8-bits number in 2's complement form is

A. -256
B. -128
C. -127
D. 0

23. The base (or radix) of the number system such that the following equation holds is _____.
312/20 = 13.1

A. 5
B. 6
C. 4
D. 3

24. Consider the equation $(123)_5 + (x8)_y$ with x and y as unknown. The number of possible solutions is_____.

A. 2
B. 3
C. 4
D. 5

25. Consider the equation $(43)_x = (y3)_8$ where x and y are unknown. The number of possible solutions is _____.

A. 3
B. 4
C. 5
D. 6

26. The 16-bits 2' complement representation of an integer is 1111 1111 1111 0101; its decimal representation is _____.

A. 10
B. 11
C. -10
D. -11

27. Let X be the number of distinct 16-bit integers in 2's complement representation. Let y be the number of distinct 16-bits integers in sign magnitude representation. Then X - y is _____.
A. 1
B. 2
C. 3
D. 4

28. The representation of the Value of a 16-bit unsigned integer X in hexadecimal number system is BCA9. The representation of the value of X in octal number system is
A. 571244
B. 736251
C. 571247
D. 136251

29. Number of 0 and 1 in the binary representation of 10 x 256 + 5 x 16 + 5
A. 5, 6
B. 6, 6
C. 7, 5
D. 5, 7

30. If $(292)_{10} = (1204)_x$ then the value of x
A. 5
B. 6
C. 7
D. 8

31. If $(43)_x = (34)_y$ then the possible values of x and y are.
A. 7,9
B. 9,7
C. 4, 6
D. 6, 4

32. Which system is used to refer amount of things?
A). Number system
B). Number words
C). Number symbols
D). All of these

33. Number system defined a set of values that is used to represent
A). quality
B). quantity
C). value
D). All of these

34. Bit at position zero is usually referred to as
A). Local Bit
B). Least Significant Bit (LSB)
C). Most significant Bit (MSB)
D). Least Significant Byte

35. In which system, each digit has a weight corresponding to its position.
A). Binary number system
B). Decimal number system
C). Octal number system
D). All of the above

36. If we replace each 'ON' switch with 1 and each 'OFF' switch with 0, then we get a number system, called
A). binary number system
B). decimal number system
C). hexadecimal number system
D). octal number system

37. The 2's complement representation of $(-539)_{10}$ in hexadecimal is
A). ABE
B). DE5
C). DBC
D). 1E5

38. When an odd number is converted into binary number the LSB is
A). 0
B). 1
C). 0 or 1
D). None of these

39. What is the octal equivalent of the hexadecimal number of 132A?
A). 46252
B). 11430
C). 11452
D). 46250

40. Binary equivalent of $(CA5)_{16}$ is
A). 110010100101
B). 100010010011
C). 111001101100
A. 101101101001

41. In which of the following computer code, characters are represented by eight bits?
A). EBCDIC
B). ASCII
C). BCD
D). None of the above

42. Which method of representation has two representations for '0'?
A). Sign-magnitude
B). 1's complement
C). 2's complement
D). A & B

43. The arithmetic operations, addition, subtraction, multiplication and division, performed on the binary number is called
A). binary system
B). binary arithmetic
C). binary calculation
D). binary method

44. A 32-bits floating-point number is represented by a 7-bits signed exponent, and a 24- bits fractional mantissa. the base of the scale factor is 16,
A. The range of the exponent is _____
B. The range of the exponent is _____ if the scale factor is represented in excess-64 format.
A). (-64 to +63) and (0 to +127)
B). (0 to +63) and (0 to +127)
C). (0 to +63) and (0 to +255)
D). (-64 to +63) and (0 to +255)

45. A ROM is used to store the table for multiplication of two 8-bits unsigned integers. The size of ROM required is
A. 256 x 16
B. 64K x 8
C. 4K x 16
D. 64K x 16

46. Sign extension is the step in
A. Floating point multiplication
B. Signed 16 bits integer addition
C. Arithmetic left shift
D. Converting a signed integer from one size to another

47. Assuming all numbers are in 2's complement representation, which of the following numbers is divisible by 11111011?
A. 11100111
B. 111100100
C. 11010111
D. 11011011

48. The two numbers given below are multiplied using the booth's algorithm
Multiplicand: 0101 1010 1110 1110,
Multiplier: 0111 0111 1011 1101,
How many additions/subtractions are required for the multiplication of the above two numbers?
A. 6
B. 8
C. 10
D. 12

49. The decimal value 0.5 in IEEE single precision floating point representation has
A. Fraction bits of 000... 000 exponent value of 0
B. Fraction bits of 000... 000 exponent value of -1
C. Fraction bits of 100... 000 exponent value of 0
D. No exact representation

50. The following bit pattern represents a floating point number in IEEE (Institute of Electrical and Electronics Engineers) single precision format: 11000001110100000000000000000000 The value of the number in decimal form is
A. - 10
B. - 13
C. - 26
D. None of these

51. Given the following binary number in 32-bits (single precision) IEEE-754 format; 00111110011011010000000000000000 The decimal value closest to this floating point number is
A. 1.45×10^{1}
B. 1.45×10^{-1}
C. 2.27×10^{-1}
D. 2.27×10^{1}