

Part I - Electrical & Electronics Engineering

1. Analog & Digital Electronics

1. Any number with an exponent of zero is equal to
A) zero B) one
C) that number D) ten
2. In the decimal numbering system, what is MSD ?
A) The middle digit of a stream of numbers
B) The digit to the right of the decimal point
C) The last digit on the right
D) The digit with the most weight
3. Which of the following statements does not describe an advantage of digital technology?
A) The values may vary over a continuous range
B) The circuits are less affected by noise
C) The operation can be programmed
D) Information storage is easy
4. The Generic array logic (GAL) device is
A) one time programmable
B) Reprogrammable
C) A CMOS device
D) Reprogrammable and a CMOS device.
5. The range of voltages between V_I (max) and V_H (min) are
A) unknown
B) unnecessary
C) unacceptable
D) between 2V and 5V
6. What is digital to analog converter ?
A) It takes the digital information from an audio CD and converts it to a usable form.
B) It allows the use of cheaper analog techniques, which are always simpler.
C) It stores digital data on a hard drive.
D) It converts direct current to alternating current.
7. What are the symbols used to represent digits in the binary number system ?
A) 0,1 B) 0, 1, 2
C) 0 through 8 D) 1,2
8. A full subtracter circuit requires
A) Two inputs and two outputs
B) Two inputs and three outputs
C) Three inputs and one output
D) Three inputs and two outputs
9. The outputs of an AND Gate is low
A) all the time
B) when any input is low
C) when any input is high
D) when all inputs are high
10. Give the decimal value of binary 10010
A) 6_{10} B) 9_{10}
C) 18_{10} B) 20_{10}
11. Parallel format means that :
A) each digital signal has its own conductor
B) several digital signals are sent on each conductor.
C) both binary and hexadecimal can be used
D) no clocks needed
12. A decoder converts _____
A) Noncoded information into coded form
B) Coded information into noncoded form
C) HIGHs to LOWs
D) LOWs to HIGHs
13. A DAC (Digital to Analog converter) changes _____
A) An analog signal into digital data
B) Digital data into an analog signal
C) Digital data into an amplified signal
D) None of the above

1. (B) 2. (D) 3. (A) 4. (B) 5. (C) 6. (A) 7. (A) 8. (D) 9. (B) 10. (C)
11. (A) 12. (B) 13. (B)

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14. The output of a NOT gate is high when _____
A) The input is low
B) The input is high
C) The input changes from low to high
D) Voltage is removed from the gate
15. The output of an OR gate is low when _____
A) all inputs are low
B) any inputs is low
C) any inputs is high
D) Any inputs are high
16. Which of the following is not a analog device?
A) Thermocouple
B) Current flow in a circuit
C) Light Switch
D) Audio microphone
17. A demultiplexer has _____
A) one data input and a number of selection inputs, and they have several outputs.
B) one input and one output
C) several inputs and several outputs
D) several inputs and one output
18. A flip-flop has _____
A) one stable state
B) no stable state
C) two stable state
D) none of the above
19. In a certain digital waveform, the period is four times the pulse width. The duty cycle is _____
A) 0% B) 25%
C) 50% D) 100%
20. In positive logic _____
A) A High = 1, A Low = 0
B) A Low = 1, A High = 0
C) Only Highs are present
D) Only Lows are present
21. Convert the fractional binary number 0000.1010 to decimal
A) 0.625 B) 0.50
C) 0.55 D) 0.10
22. A common instrument used in trouble shooting a digital circuit is a _____
A) Logic probe B) Oscilloscope
C) Pulser D) All of the above
23. What is one relative disadvantages of serial transfer ?
A) It requires too many conductors
B) Its interconnect system is complex
C) It is slow
D) It can only be used over very short distance
24. Which format requires fewer conductors?
A) Parallel B) Serial
C) Both are the same D) Cannot tell
25. A pulse has a period of 15ms. Its frequency is _____
A) 6.66 HZ B) 66.66 HZ
C) 666.66 HZ D) 15 HZ
26. Give the decimal value of binary 100010
A) 134_{10} B) 144_{10}
C) 110_{10} D) 126_{10}
27. A decoder is a and logic circuit that converts coded inputs into coded outputs, where the input and output codes are different.
A) Single input and single output
B) single input and multiple output
C) multiple input and multiple output
D) all the above
28. What is an analog to digital converter?
A) It makes digital signals.
B) It takes analog signals and puts them in digital format.
C) It allows the use of digital signals in everyday life.
D) It stores information on a CD.

14. (A) 15. (A) 16. (C) 17. (A) 18. (C) 19. (B) 20. (A) 21. (A) 22. (D) 23. (C)
24. (B) 25. (B) 26. (A) 27. (C) 28. (B)

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29. A multiplexer has _____
 A) One input and several outputs
 B) One input and one output
 C) Several inputs and several outputs
 D) Several inputs and one output
30. What is the decimal value of 2^3 ?
 A) 2
 B) 4
 C) 6
 D) 8
31. An encoder converts _____
 A) noncoded information into coded form
 B) coded information into noncoded form
 C) Highs to Lows
 D) Lows to Highs
32. What kind of logic device or circuit is used to store information?
 A) Counter
 B) Resister
 C) Inverter
 D) Buffer
33. PLCC packages have leads on _____
 A) one side
 B) two sides
 C) three sides
 D) four sides
34. What is the typical invalid voltage for a binary signal?
 A) 0.7 - 2.8 volts
 B) 0.8 - 3.0 volts
 C) 0.8 - 2.0 volts
 D) 0.7 - 2.5 volts
35. How many binary bits are necessary to represent 748 different numbers?
 A) 9
 B) 7
 C) 10
 D) 8
36. A periodic digital waveform has a pulse width (tw) of 6ms and a period (T) of 18Ms. The duty cycle is _____
 A) 3.3%
 B) 33.3%
 C) 6%
 D) 18%
37. Yagi antenna is used for receiving
 A) Radio signals
 B) Television signals
 C) Both A and B
 D) None of these
38. What is the decimal value of 2^{-1} ?
 A) 0.5
 B) 0.25
 C) 0.05
 D) 0.1
39. Which format can send several bits of information faster?
 A) Parallel
 B) Series
 C) Both A & B
 D) None of these
40. The frequency of a pulse train is 2KHz. The pulse period is _____
 A) 5 ms
 B) 50 ms
 C) 500 Ns
 D) 2 Ns
41. A type of digital circuit technology that uses bipolar junction transistor is _____
 A) TTL
 B) CMOS
 C) LSI
 D) NMOS
42. How many unique symbols are used in the decimal number system?
 A) One
 B) Nine
 C) Ten
 D) Unlimited
43. A classification of ICs with complexities of 12 to 100 equivalent gates on a chip is known as _____
 A) SSI
 B) MSI
 C) LSI
 D) VLSI
44. Which of the following is a semiconductor memory?
 A) RAM
 B) MAR
 C) CD-ROM
 D) CD
45. A classification of ICs with complexities of 100 to 1000 equivalent gates per chip is known as _____
 A) SSI
 B) MSI
 C) LSI
 D) VLSI
46. The output of an AND Gate with three inputs A, B and C is high when _____
 A) A = 1, B=1, C=0
 B) A = 0, B=0, C=0
 C) A = 1, B=1, C=1
 D) A = 1, B=0, C=1

29. (D) 30. (D) 31. (A) 32. (B) 33. (D) 34. (C) 35. (C) 36. (B) 37. (B) 38. (A)
 39. (A) 40. (C) 41. (A) 42. (C) 43. (B) 44. (A) 45. (C) 46. (C)

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