

Robotics, Electricity & Electronics Question Bank

1. Electricity at rest is called...
 - A. Voltage
 - B. Current Electricity
 - C. Short circuit
 - D. Static electricity**
2. The negatively charged particle studied in electronics is called the...
 - A. Electron**
 - B. Proton
 - C. Neutron
 - D. Ion
3. The positively charged particle studied in electronics is called the...
 - A. Electron
 - B. Proton**
 - C. Neutron
 - D. Ion
4. A material that supports the flow of electricity is called a (an)...
 - A. Insulator
 - B. Conductor**
 - C. Passer
 - D. Circuit Supporter
5. A material that blocks the flow of electrons is called a (an)
 - A. Insulator**
 - B. Conductor
 - C. Passer
 - D. Circuit supporter
6. An electrically unbalanced atom is called a (an)...
 - A. Electron
 - B. Proton
 - C. Neutron
 - D. Ion**
7. Electric pressure, electromotive force, or difference in potential is called...
 - A. Voltage**
 - B. Current
 - C. Resistance
 - D. Wattage
8. The flow of electrons is called...
 - A. Voltage
 - B. Current**

- C. Resistance
- D. Wattage

9. The unit of measurement for current is the...

- A. Volt
- B. Ohm
- C. Watt
- D. Ampere**

10. The ohmmeter is used to measure...

- A. Voltage
- B. Current
- C. Resistance**
- D. Wattage

11. The Metric term used to represent thousands is...

- A. Milli
- B. Micro
- C. Kilo**
- D. Meg

12. The metric term used to represent millionths (10^{-6}) is...

- A. Milli
- B. Micro**
- C. Kilo
- D. Meg

13. The resistance size of a resistor is usually indicated by...

- A. The number printed on the part
- B. The size indicated on the circuit board
- C. The Color Code**
- D. A photograph showing parts location

14. Schematic symbols are...

- A. Detailed drawing of electrical parts
- B. Hand signs used by electricians in noisy areas
- C. The color Code**
- D. A photograph showing parts location

15. Like static charges...

- A. Attract
- B. Repel**
- C. Cause the flow of current
- D. Cause shorts

16. When electric currents flowing through the body upset the rhythm of the heart...

- A. Electrocutation occurs
- B. Death occurs
- C. Attacks occur
- D. Fibrillation Occurs**

17. The Amount of current flow through a person that can stop voluntary body movement (let go current) is....

- A. 1 ampere
- B. 1/10 ampere**
- C. 1/100 ampere
- D. 1/1000 ampere

18. Greek symbol μ is used to represent...

- A. Thousandths
- B. Trillionths
- C. Billionths
- D. Millionths**

19. If voltage is multiplied times the current the result is the...

- A. Speed of the electrons
- B. Frequency
- C. Wattage**
- D. Time Delay

20. A current of 75mA would be written in decimal form as

- A. 0.75A
- B. 0.075A**
- C. 0.0075A
- D. 0.00075A

21. Current in a series circuit...

- A. is the same at all points**
- B. Decreases as it moves through each part
- C. is larger through the larger parts
- D. Increases as more parts are added to the circuit

22. Houses are wired using this method of wiring to allow independent use of the loads...

- A. Parallel**
- B. Series
- C. Combination
- D. Universal

23. If a component in a series circuit fails (open) the result is...

- A. The rest of the circuit works, as it should
- B. Only the parts past the defective component will operate
- C. Nothing else in the circuit will work either**

- D. Too much current will flow in the circuit
24. The major parts of an alternator are...
- A. Armature, field winding, brushes, and commutator
 - B. Secondary winding and core
 - C. Rotor, stator, brushes, and slip rings**
 - D. Armature, rotor, and field winding
25. The AC output of an alternator is changed into DC with the...
- A. Diodes**
 - B. Rotor
 - C. Slip Rings
 - D. Commutator
26. Dead Carbon zinc cells should be replaced because they...
- A. Can overheat
 - B. Can cause shorts
 - C. May leak acid on the circuit**
 - D. May not take a charge
27. The main potential hazard of lead acid cells is that they...
- A. Produce hydrogen which can explode**
 - B. Can leak
 - C. Produce harmful fumes
 - D. get hot
28. Solar Cells are made out of...
- A. Carbon
 - B. Silicon**
 - C. Tin plates
 - D. Silver
29. Coils are used in circuits because they...
- A. Pass low frequencies better than they do high frequencies**
 - B. Pass high frequencies better than they do low frequencies
 - C. Store energy in an electrostatic field
 - D. Can create energy from nothing
30. The opposition of an inductor to AC is called
- A. Resonance
 - B. Reluctant
 - C. Resistance
 - D. Reactance**
31. Transformers are coils having two or more windings that...
- A. Step voltages up or down**

- B. Create more opposition to low frequencies
 - C. Amplify AC signals
 - D. All of the above
32. A capacitor is constructed out of...
- A. Coils of wire
 - B. Metal plates with insulation between them**
 - C. Semiconductor Materials
 - D. Wood Fibers
33. Capacitors store energy in the form of...
- A. Current
 - B. Gigawatts
 - C. Electrostatic charges**
 - D. Dielectric losses
34. Capacitance is the electric property that opposes any change in...
- A. Current
 - B. Power
 - C. Voltage**
 - D. Ion Structure
35. Capacitors block the flow of...
- A. Direct Current**
 - B. Alternating current
 - C. High Voltage
 - D. High frequency
36. Capacitance is measured in...
- A. Watts
 - B. Ohms
 - C. Amps
 - D. None of the above**
37. Total opposition in an AC circuit is called....
- A. Combined Resistance
 - B. Impedance**
 - C. Unified reactance
 - D. Maximum Ohms
38. The phase angle of a circuit describes...
- A. The degree to which voltage and current are out of time with each other**
 - B. The time distortion caused by transistors
 - C. Always less than true power
 - D. No Way! All of these are bad answers

39. Apparent power in AC circuit is...
- A. Always less than one
 - B. 100 times the power factor
 - C. Always less than true power
 - D. The voltage times the current**
40. The apparent power times the power factor gives the...
- A. Phase angle
 - B. Impedance
 - C. True Power**
 - D. Total power inversion
41. The letter symbol for capacitive reactance is...
- A. R_c
 - B. X_c**
 - C. E
 - D. I
42. Capacitance is measured in
- A. Farads**
 - B. Henry
 - C. Watts
 - D. Kilowatts
43. The purpose of a rectifier in a circuit is to...
- A. Store electric energy
 - B. Block the flow of all current
 - C. Filter altering current from the direct current
 - D. Allow current to flow only one direction**
44. The purpose of the transistor in a circuit is to...
- A. Allow current flow in one direction
 - B. Magnify the AC power of the circuit**
 - C. Store electric Charges
 - D. Block all current flow
45. It is impossible for an amplifier to have more output than...
- A. 250 times the input voltage
 - B. The 120VAC from the wall outlet
 - C. The DC supply used to power the amplifier**
 - D. The input
46. The process of bonding electronic components with a low temperature alloy is called...
- A. Gluing
 - B. Bread boarding
 - C. Connecting

D. Soldering

47. Solder consisting of Half lead and half tin is called...
- A. **50/50**
 - B. 60/40
 - C. 63/37
 - D. Eutectic Solder
48. The main reason wires and components are soldered is to...
- A. Burn insulation
 - B. **Prevent Oxidation**
 - C. Make projects cost more
 - D. Make projects look better
49. Soldering flux is used to...
- A. Melt solder
 - B. **Clean the materials being soldered**
 - C. Chrome plate the tip of the Iron
 - D. Melt the Parts
50. Do not use solder with his kind of flux in electronics
- A. Silicon
 - B. Lead
 - C. Rosin
 - D. **Acid**
1. The range setting of a voltmeter is changed by adding resistors in:
- A. **series**
 - B. parallel
 - C. combination
 - D. universal
2. The range setting of an ammeter is changed by adding resistors in:
- A. series
 - B. **parallel**
 - C. combination
 - D. universal
3. The analog meter operates on the principles of:
- A. static electricity
 - B. air pressure
 - C. **electromagnetism**
 - D. capacitance
4. Almost all analog meter movements measure:
- A. voltage

- B. current**
- C. resistance
- D. power

5. Meters measure AC by incorporating these into their design.

- A. diodes**
- B. resistors
- C. capacitors
- D. coils

6. The purpose of the A to D converter in a digital meter is to:

- A. change the AC to DC
- B. convert the amps to digital format
- C. change analog signals to digital signals**
- D. convert to decimal display format

7. Amplifiers are added to quality meters to increase the:

- A. input resistance of the meter.**
- B. speed of the meter
- C. reliability of the meter
- D. life expectancy

8. The deflection plates are part of the:

- A. digital meter
- B. analog meter
- C. function generator
- D. oscilloscope**

9. Some measuring instruments load the circuit being tested. This means that:

- A. the input resistance is too high
- B. they are more accurate when this occurs
- C. they take too much power from the circuit being tested causing errors**
- D. the meter may be damaged

10. The oscilloscope can be used to measure:

- A. frequency and current
- B. time and voltage**
- C. power and voltage
- D. resistance and current

11. The purpose of the base region of a transistor is to:

- A. emit electrons
- B. control electron flow**
- C. collect electrons
- D. provide a starting place for electrons

12. The leads of a bipolar transistor are the:
- A. anode, cathode and emitter
 - B. ground, cathode and emitter
 - C. emitter, base and collector**
 - D. anode, base and collector
13. Currents in these two parts of the transistor are nearly the same:
- A. Base and collector
 - B. anode and cathode
 - C. base and anode
 - D. emitter and collector**
14. The most common transistor configuration is the common:
- A. Base
 - B. Collector
 - C. Emitter**
 - D. Anode
15. If a technician finds that a transistor has a high resistance between two leads:
- A. it is a bad transistor
 - B. it is a good transistor
 - C. it should have high gain
 - D. this is not enough information to make any conclusion**
16. In most cases the voltage between the emitter and base of a silicon transistor is:
- A. about .7 Volts**
 - B. about 7 volts
 - C. any voltage
 - D. dependant upon the power supply being used.
17. Characteristic curves of a transistor can be used to:
- A. determine transistor life expectancy
 - B. design circuit biasing**
 - C. measure transistor frequency response
 - D. none of the above
18. A line drawn on characteristic curves from cut off to saturation is:
- A. the load line**
 - B. the operating point
 - C. the operating line
 - D. The linear output
19. The parts of the JFET are the:
- A. the emitter, base and collector
 - B. the anode, cathode, and ground
 - C. the gate source and drain**

D. the emitter, source and drain

20. Since the JFET is a voltage operated device it has a high:

- A. **input resistance**
- B. gain
- C. frequency of operation
- D. all of the above

21. If more negative voltage is applied to the input of an N channel JFET it will....

- A. conduct more current
- B. **conduct less current**
- C. block more voltage
- D. get hot

22. The MOSFET has an extremely high:

- A. **input resistance**
- B. frequency of operation
- C. tolerance for temperature variations
- D. all of the above

23. The MOSFET requires special handling because:

- A. they are very expensive
- B. **the gate area is very thin and can be damaged by static electricity.**
- C. they can store a charge that can be released without warning.
- D. they are very, very small and easy to loose

24. The parts of the SCR are the:

- A. base, emitter, and collector
- B. gate, source and drain
- C. **anode, cathode and gate**
- D. emitter, base1, and base 2

25. The input to the SCR is the:

- A. **gate**
- B. base
- C. anode
- D. emitter.

26. The triac is used in AC circuits because:

- A. **it is a full wave device**
- B. it has three inputs
- C. it has three outputs
- D. all of the above are correct

27. The numbering system used most often in digital electronics uses:

- A. **two symbols**

- B. five symbols
- C. ten symbols
- D. negative logic

28. The fifth digit of the binary numbering system has a weight of:

- A. 32
- B. 24
- C. 16**
- D. 12

29. Binary numbers are converted into decimal numbers by:

- A. adding the weights if a 1 appears in the digit**
- B. dividing the number by two and recording the remainder
- C. multiplying by 2 and recording the least significant digit
- D. using a decoder

30. The decimal equivalent of 10110 is:

- A. 14
- B. 22**
- C. 44
- D. 4767

31. The hexadecimal system of numbering is often used in digital electronics because:

- A. the computer often uses 16 bits
- B. transformation between hex and binary is easy**
- C. six codes can be used at once
- D. it performs antivirus functions.

32. An inverter will:

- A. combine two inputs into one output
- B. change the electrical polarity of the input (+5 to -5 or -5 to +5)
- C. change the logic level of the input to the opposite (1 to 0 or 0 to 1)**
- D. convert decimal numbers into binary numbers

33. A chart showing all of the input vs. output combinations of a logic circuit is a:

- A. truth table**
- B. Boolean symbol
- C. logic diagram
- D. block diagram

34. The logic function that gives a 1 output if 1 is applied to any input is called:

- A. NAND
- B. AND
- C. OR**
- D. NOR

35. In a Boolean expression $A+B$ the + sign means:

- A. NAND
- B. NOR
- C. AND
- D. OR**

36. An AND gate with inverted inputs makes an:

- A. OR
- B. NOR**
- C. NAND
- D. XOR

37. The logic device that produces a one output only if all inputs are one is the:

- A. OR
- B. NAND
- C. AND**
- D. XOR

38. This gate gives an output only if all inputs are 0:

- A. OR
- B. NAND
- C. AND
- D. NOR**

39. The gate that produces an output only if an odd number of inputs is present is the:

- A. OR
- B. NAND
- C. AND
- D. XOR**

40. Pick the Boolean equation for the truth table:

	CBA	Out
A. $CBA + ABC + C'BA'$	000	0
B. $C'BA' + CB'A + CBA$	001	0
C. $(C'+BA')(C+B'+A)(C+B+A)$	010	1
D. None of the above	011	0
	100	0
	101	1
	110	0
	111	1

41. The multivibrator that has a continually changing output is:

- A. monostable
- B. bistable
- C. astable**
- D. flip flop

42. The D flip flop is unique because:
- A. it is the only digital flip flop
 - B. it operates only after a specific time delay
 - C. data is transferred from the D input to the output after one clock pulse**
 - D. all of the above
43. The 8421 BCD code is used because:
- A. it makes it easier to convert between number systems**
 - B. it makes it harder for someone to break a code
 - C. everyone has to use the same code
 - D. it is an automatic code
44. If the output of one flip flop is wired to the input of another it makes a:
- A. ripple counter**
 - B. decoder
 - C. multiplier
 - D. subtractor
45. The quantity of output combinations of a counter is called the:
- A. base
 - B. modulus**
 - C. MSD
 - D. frequency
46. Flip flops can be used to make:
- A. counters
 - B. dividers
 - C. shift registers
 - D. all of the above**
47. One of the main parts of the binary adder is the:
- A. NAND
 - B. OR
 - C. XOR**
 - D. NOR
48. Binary subtraction can be accomplished by adding using:
- A. one's complements**
 - B. negative logic
 - C. code converters
 - D. hex inverters
49. Which of the following is NOT a digital memory?
- A. RAM
 - B. ROM
 - C. PROM

D. XP

50. The A to D converter:
- A. converts the LSD into the MSD in a counter
 - B. converts arithmetic to digital signals in a calculator
 - C. changes accelerated to delay inputs
 - D. converts analog to digital levels**
1. To control one light from two locations, we would need:
- A. Two 4-way switches
 - B. Two single-pole switches
 - C. Two 3-way switches**
 - D. Two 2-way switches
2. The resistance of an electrical conductor depends on:
- A. Length, material, diameter, and temperature**
 - B. Size, length, material, and insulation
 - C. Length, size, ampacity, and material
 - D. Size, insulation, relative resistance and material
3. A Fish Tape is used in electrical work for:
- A. Measuring length of conductors
 - B. Installing house sheet rock
 - C. Laying out knob and tube wiring
 - D. Pulling wire through conduit**
4. Diameter in mils refers to:
- A. Carrying capacity of wires
 - B. Diameter of cartridge fuses
 - C. Size of conduit
 - D. Diameter of Conductor**
5. A transformer has a 1:10 turns ratio. If we put 30 volts in we get _____ volts out.
- A. 3 volts
 - B. 30 volts
 - C. 300 volts**
 - D. 3000 volts
6. A test to determine whether a circuit is complete or open is called a test for:
- A. Capacitance
 - B. Continuity**
 - C. Continuance
 - D. Resistance

7. Most residential house general purpose circuits are wired inside with either _____ or _____ gauge wire.
- A. 00 or 000
 - B. 15 or 20
 - C. 110 or 220
 - D. 12 or 14**
8. The metallic pipes that carry electrical wire through a building are called:
- A. Service leads
 - B. Neutrals
 - C. Conduits**
 - D. Buss piping
9. What current will a toaster draw if the rated wattage is 1200 watts on a 120 volt line?
- A. 1.0 amp
 - B. 10 amps**
 - C. 1.44 amps
 - D. 14.4 amps
10. The current needed to operate a soldering iron which has a rating of 600 watts at 110 volts is?
- A. .182 amps
 - B. 5.455 amps**
 - C. 18.2 amps
 - D. 5.4 milliamps
11. The set of standards drawn up by the National Fire Protection Association is called?
- A. The standard testing code
 - B. National Electric Code**
 - C. Universal Laboratory Code
 - D. National Fire Code
12. The proper size circuit breaker for a general purpose circuit will depend on the:
- A. Number of appliances to be used on the circuit
 - B. Current consumption of the appliance to be used on the circuit
 - C. Current carrying capacity of conductors**
 - D. Number of receptacle outlets in the circuit
13. The proper size conductor used for a special purpose circuit will depend on:
- A. Wattage of the appliance to be used on the circuit
 - B. Current consumption of the appliance to be used on the circuit
 - C. Type of appliance to be used on the circuit
 - D. All of the above may be considered**

14. The name given to two switches that are placed under one face plate for the purpose of controlling separate outlets is a:
- A. Two-gang switch**
 - B. Two-way switch
 - C. Double-pole switch
 - D. Single-pole switches
15. A receptacle outlet should be installed with the grounding holes:
- A. Pointing to the top**
 - B. Pointing to the bottom
 - C. All pointing the same direction (up or down)
 - D. Pointing whichever way looks the best to you
16. Before installing your service entrance panel determine the location:
- A. Based on the best look for your house
 - B. Based on the location of your Heat Pump or furnace
 - C. Based on the height of your roof
 - D. Based on the opinion of the building inspector**
17. Never load a circuit to more than _____ percent of the branch-circuit rating.
- A. 80**
 - B. 90
 - C. 50
 - D. 70
18. A split receptacle is:
- A. Normally set up to be half controlled by a switch and half hot constantly**
 - B. Easily broken into to make two separate single outlets
 - C. Very dangerous and needs to be replaced
 - D. Not allowed under the National Electric Code guidelines
19. The National Electric Code:
- A. Does not become “law” until adopted by official action of the legislative body of a city, county, or state
 - B. Is revised and updated every three years
 - C. Is the basic standard which governs electrical work
 - D. All of above**
20. An Underwriters Laboratory approved product is:
- A. Approved and recommended for use
 - B. The best product for a particular application
 - C. Ready to be patented
 - D. Listed as a product that conforms to UL’s safety standards**
21. The number of conductors allowed in an outlet box is determined by the National Electric Code.

Which is not counted as one conductor?

- A. A conductor running through the box
- B. A conductor originating outside the box and terminating inside the box
- C. A fixture stud
- D. Conductors that originate and terminate within the box**

22. Where a wall is partially tiled, a switch or convenience outlet must be located:

- A. Entirely outside the tiled area
- B. Entirely inside the tiled area
- C. Both A or B are acceptable**
- D. It doesn't matter as long as the switch is located in a metallic box

23. The NEC (National Electric Code) defines a branch circuit as:

- A. The wires running between two three way switches connecting them together
- B. The circuit conductors between the service equipment and the final branch-circuit overcurrent device
- C. The circuit conductors between the final overcurrent device protecting the circuit and the outlets.**

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- A. The wires running between two three way switches connecting them together
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- C. The circuit conductors between the final overcurrent device protecting the circuit and the outlets.

25. The NEC defines traveler wires as:

- A. The wires running between two three way switches connecting them together**
- B. The circuit conductors between the service equipment and the final branch-circuit overcurrent device
- C. The circuit conductors between the final overcurrent device protecting the circuit and the outlets

26. Hallways 10 feet or longer in homes must have at least _____ receptacle outlet(s).

- A. 1**
- B. 2
- C. No requirement
- D. Depends on hallway shape

27. No point along the floor line is to be more than _____ feet from a receptacle.

- A. 6**
- B. 8
- C. 10
- D. 12

28. Each single-family dwelling is required to have _____ outdoor GFCI protected receptacle(s)
- A. 1 (recommended but not required)
 - B. 1**
 - C. 2 (recommended but not required)
 - D. 2
29. At least _____ 20-ampere small appliance circuits must supply the receptacle outlets in the kitchen, dining areas or pantry.
- A. 1
 - B. 2**
 - C. 3
 - D. 4
30. In kitchens and dining rooms, receptacle outlets must be installed above all countertops _____ or wider.
- A. 5 feet
 - B. 2 feet
 - C. 18 inches
 - D. 12 inches**
31. Receptacle outlets need not be GFCI protected if located:
- A. Under the sink serving waste disposal**
 - B. Within 6 feet of a wet bar sink
 - C. Within 6 feet of a kitchen sink
 - D. In the first floor bathroom
32. Generally _____ volts or greater are considered lethal.
- A. 50**
 - B. 40
 - C. 90
 - D. 110
33. How many receptacle outlets are allowed to be installed on a general purpose circuit?
- A. 10
 - B. 12
 - C. 15
 - D. No limit declared**
34. Which is not a term describing the same type of connector
- A. Twist-on connector
 - B. Terminal connector**
 - C. Solderless connector
 - D. Redhead
35. When describing cable as 12/3 with ground the 3 stands for:

- A. The conductor size
- B. The number of conductors
- C. The number of insulated conductors**
- D. The circular mills

36. When describing cable as 12/3 with ground the 12 stands for:

- A. The conductor size**
- B. The number of conductors
- C. The number of insulated conductors
- D. The circular mills

37. On a three-prong plug the smaller prong is the:

- A. Hot**
- B. Neutral
- C. Ground
- D. All of the above

38. On a three-prong plug the U-shaped prong is the:

- A. Hot
- B. Neutral
- C. Ground**
- D. All of the above

39. When installing conduit between two boxes no more than _____ degrees of bends are permitted.

- A. 90
- B. 180
- C. 270
- D. 360**

40. The outside grounding electrode's minimum length is?

- A. 6
- B. 8**
- C. 10
- D. 12

41. Service-drop conductors must maintain a _____ foot clearance from windows, porches and doors.

- A. 2
- B. 3**
- C. 4
- D. 6

42. Service-drop conductors must maintain a _____ foot clearance if passing over the roof.

- A. 1.5
- B. 2**

- C. 2.5
- D. 3**

43. Service-drop conductors must maintain a _____ foot clearance above the roof overhang.

- A. 1
- B. 1.5**
- C. 2
- D. 3

44. An architectural plan uses S_3 to represent the location of a:

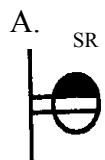
- A. 3 amp fuse
- B. Switch rated at 3 amps
- C. 3-way switch**
- D. 3 switches ganged together

45. Which symbol below represents a power panel?



- A.
- B.**
- C.
- D. none of the above

46. Which symbol below represents a split-circuit receptacle outlet?



B.



C. SR



D. WP

47. Which symbol below represents a special purpose outlet?



A. R



B. R



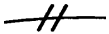
C. R



D.

SP

48. Which symbol below represents three wires in a cable or raceway?



A. 3



B. 3



C.



D.

49. A 30 Amp dryer outlet should be connected with:

- A. 12/3W-GRND Romex cable
- B. 14/3WO-GRND Romex cable
- C. 10/3W-GRND Romex cable**
- D. 12/3WO-GRND Romex cable

50. A 50 Amp range outlet should be connected with:

- A. Nonmetallic-sheathed cable with No. 12 conductors
- B. Nonmetallic-sheathed cable with No. 10 conductors
- C. Nonmetallic-sheathed cable with No. 8 conductors
- D. Nonmetallic-sheathed cable with No. 6 conductors**

1. The voltmeter is connected this way in a circuit to make measurements:
 - A. parallel**
 - B. series
 - C. either series or parallel depending upon whether measuring AC or DC
 - D. universal meter connection

2. An ammeter is connected this way in a circuit to make measurements:
 - A. parallel
 - B. series**
 - C. either series or parallel depending upon whether measuring AC or DC
 - D. universal meter connection

3. This measurement must be taken with the power turned off in the circuit:
 - A. volts
 - B. amps
 - C. ohms**
 - D. watts

4. Input resistance of meters is important because:
 - A. ohmmeters measure resistance
 - B. if the resistance is high it will add to measurements taken
 - C. it must be matched to the circuit under test
 - D. If it is too low the meter will give inaccurate voltage measurements**

5. The component used as a switch or amplifier is the:
 - A. transistor**
 - B. diode
 - C. variable capacitor
 - D. SCR

6. The amount of increase created by an amplifier is called:
 - A. boost
 - B. increase
 - C. gain**
 - D. amplitude

7. The bipolar transistor is made of:
 - A. silicon, gallium and arsenic**
 - B. germanium, silicon and lead
 - C. silicon, barium and tin
 - D. carbon, tin and lead

8. If ohmmeter tests of the collector-base junction of a transistor are high with both polarities:
 - A. it should work
 - B. it has the wrong polarity

C. it should be replaced

D. increase the power

9. Most of the current flow through a transistor is from the:

A. base to the collector

B. emitter to the collector

C. gate to the cathode

D. cathode to anode

10. The DC voltage applied to a transistor to make it operational is called:

A. bias

B. source

C. gain

D. B supply

11. Gain refers to the transistor's ability to:

A. increase the frequency of an electric signal

B. increase the size of an electric signal

C. elevate the temperature

D. all of the above

12. The thing(s) that determine the gain of a transistor are:

A. heat

B. transistor type

C. circuit design

D. all of the above

13. The sensitivity of human hearing is:

A. logarithmic

B. linear

C. temperature sensitive

D. time sensitive

14. What would be most useful in designing an amplifier?

A. a slide rule

B. a voltmeter

C. characteristic curves and a loadline

D. a doctor

15. This amplifier class provides the least distortion:

A. class A

B. class B

C. class AB

D. class C

16. Most push pull amplifiers are biased this way.

A. class A

- B. class AB**
- C. class B
- D. class C

17. The purpose of the emitter resistor in a (CE) transistor amplifier is to:

- A. increase the power output
- B. increase the frequency response of the amplifier
- C. provide negative feedback to control thermal runaway**
- D. provide gain compensation

18. The emitter resistor in a (CE) transistor amplifier is often shunted by a capacitor to:

- A. increase the AC gain**
- B. make the circuit more stable
- C. increase the frequency response
- D. compensate for transistor variations

19. The common collector amplifier is often used for:

- A. phase inversion
- B. very high voltage gain
- C. impedance matching**
- D. input circuits

20. If a transistor circuit is saturated it is:

- A. producing the maximum input impedance
- B. not carrying any current
- C. working properly
- D. carrying all the current that it can**

21. The push pull amplifier is designed to overcome problems with:

- A. distortion caused by class B amplifiers**
- B. signal inversion caused by NPN transistors
- C. poor frequency response of capacitor circuits
- D. low gain of bipolar transistors

22. Class B amplifiers are used in most battery powered outputs because:

- A. no current flows in this amplifier
- B. no current flows on the positive alternation
- C. no current flows when there is no input signal**
- D. they reduce distortion

23. The purpose of the diode in a power supply is to:

- A. increase the power output
- B. change the AC to DC**
- C. change the DC to AC
- D. keep the voltage constant

24. If the filter capacitor in a power supply of an amplifier opens:
- A. It will cause no output because the circuit is open
 - B. there will be a very loud hum from the speaker**
 - C. no noticeable change will occur
 - D. it will have a very poor frequency response
25. Many power supplies use two or more diodes in their design because:
- A. smaller filter capacitors can be used**
 - B. more parts makes it more reliable
 - C. the power output can be doubled
 - D. all of the above
26. Transformers are used in power supplies to:
- A. provide isolation from the hot wire
 - B. prevent ground loops
 - C. step voltages up or down
 - D. all of the above**
27. Feedback regulators offer the additional benefit of better:
- A. power gain
 - B. dependability
 - C. regulation**
 - D. less power loss
28. Switch mode regulators are used in many consumer products because:
- A. smaller filter capacitors can be used
 - B. the size of the power supply can be reduced
 - C. the efficiency of the power supply is increased
 - D. all of the above**
29. The measurement of cycles per second used in radio is a measurement of:
- A. time
 - B. frequency**
 - C. distance
 - D. wavelength
30. Radio waves that radiate up and are bent back down by the ionosphere are called:
- A. sky waves**
 - B. bent waves
 - C. radio signals
 - D. F.M. multiplex
31. The speed of light divided by the frequency of a signal gives the:
- A. particle inter modulation index
 - B. inverse hyperbolic refraction ratio
 - C. particle velocity in meters per second

D. wavelength

32. When the strength of a carrier changes with the audio signal being sent it is called:
- A. audio modulated
 - B. heterodyned
 - C. amplitude modulated**
 - D. frequency modulated
33. Some radio signals travel greater distances at night because:
- A. sunlight distorts signals
 - B. the ionosphere is higher at night**
 - C. more power is used
 - D. wrong, they don't travel further at night
34. Nearly all radios produced today are:
- A. superheterodyne**
 - B. super conductive
 - C. tuned radio frequency
 - D. regenerative
35. The IF stages in a radio are the:
- A. ionized frequency oscillators
 - B. isolated frequency modulators
 - C. intermediate frequency amplifiers**
 - D. inter-frequency tuners
36. The circuit in the radio that changes or picks out the station you want to listen to is the:
- A. amplifier
 - B. detector
 - C. tuner**
 - D. sorter
37. All radios having IF stages also have a:
- A. inter modulation distorter
 - B. local oscillator**
 - C. infrared detector
 - D. these are some real stupid answers
38. The process of removing sound signals from a carrier is called:
- A. separation
 - B. isolation
 - C. filtering
 - D. none of the above**
39. Setting the coils in the IF stages to the proper frequency is called:
- A. tuning

- B. setting
- C. peaking
- D. alignment**

40. Stereo transmissions contain:

- A. left+right
- B. left-right
- C. SCA signals
- D. all of the above**

41. The space used by a station is called:

- A. band width**
- B. frequency
- C. spread
- D. spac.

42. The radio having the most problems with static is the:

- A. AM**
- B. PM
- C. FM
- D. old junker radios

43. These radio signals travel only line of sight:

- A. AM
- B. video
- C. low frequency
- D. very high frequency**

44. Television picture signals are called:

- A. pixels
- B. video**
- C. TV
- D. scanning

45. The purpose of the vidicon tube in a television camera is to:

- A. separate the image into separate colors
- B. frequency modulate the carrier
- C. produce a voltage that is proportional to the light intensity**
- D. create a picture negative

46. In the United States, the television uses this many scanning lines:

- A. 525**
- B. 625
- C. 15,750
- D. 4,000,000

47. The timing of the scanning lines in a television is controlled by the:
- A. phase controller
 - B. timer-sequence
 - C. sync pulses**
 - D. color burst
48. The frequency of the horizontal oscillator in a television set is:
- A. 525 Hz
 - B. 625 Hz
 - C. 15,750 Hz**
 - D. 4,000,000 Hz
49. Interlace scanning used in the United States means that:
- A. the top half one picture goes with the bottom half of another
 - B. the right side of one picture combines with the left side of another
 - C. the sound is mixed in with the picture
 - D. the picture is transmitted odd lines then even line**
50. If the horizontal oscillator fails in a television, the symptom will be:
- A. a horizontal line on the screen
 - B. a vertical line on the screen
 - C. no picture at all because there won't be any high voltage**
 - D. a very distorted picture