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. Electrocution 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 i 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 lass 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. Rc
 - B. Xc
 - С. Е
 - 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 anitvirus 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.
- 24. The NEC defines a feeder 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.
- 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).
 - Å. 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. $\overline{50}$
 - 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?

-		
_		

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77777



- А. **В.**
- С.
- D. none of the above
- 46. Which symbol below represents a split-circuit receptacle outlet?



47. Which symbol below represents a special purpose outlet?



B7

B.

-+++

C. H hD.

3

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

3

- 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