

MIDTERM UNIT TEST**DO NOT WRITE ON TEST!!**

Matching Section: Put these problem-solving approaches in a logical order.

1. _____ a. test your hypothesis
2. _____ b. background information
3. _____ c. communicate results
4. _____ d. record observations and results
5. _____ e. recognize the problem
6. _____ f. analyze your data
7. _____ g. form a hypothesis

True or False. A IS TRUE AND B IS FALSE!!

8. _____ A conclusion is an educated guess about an answer to a problem.
9. _____ The control group contains the independent variable.
10. _____ A valid scientific experiment has three groups.

Read the following experiment and then circle the correct answer for each question about it.

Experiment 1

There is much pollution in the atmosphere from cars, factories, etc.... It is causing rain to contain a weak acid. This acid rain is causing major problems to life on Earth. You want to support or disprove this hypothesis. You buy two pots that contain the same plant. You water one with tap water and the other one with water that contains vinegar. You make sure you label each plant with the kind of water you are using. You notice that the leaves of the plant watered with the vinegar water are turning yellow and that the other plant's leaves have not changed color.

11. The correct hypothesis for this experiment would be:

- A. Acid rain water turns leaves yellow.
- B. If acid rain falls on plants then the plant might die.
- C. If a plant receives enough light and water then a plant will most likely survive.

Write two observations one might make about the experiment.

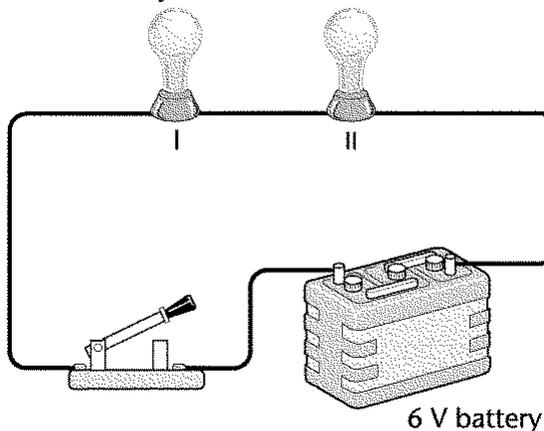
12. _____ Control Group A. Plant watered with acid rain
13. _____ Experimental Group B. Plant watered with tap water

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- ___ 14. What is the region around a charged object where an electric force is present?
- a. electric force
 - b. proton
 - c. electric field
 - d. electron
- ___ 15. What happens when electrons move from one object to another by direct contact?
- a. friction
 - b. detection
 - c. induction
 - d. conduction
- ___ 15. If a material does not allow charges to move through it easily, what is it called?
- a. electrical insulator
 - b. electrical conductor
 - c. static electricity
 - d. electric discharge
- ___ 16. What is the loss of static electricity as charges move off an object?
- a. static
 - b. electric discharge
 - c. friction
 - d. induction
- ___ 17. As resistance goes up, what happens to the current?
- a. The current goes up.
 - b. The current goes down.
 - c. The current stays the same.
 - d. The current disappears.
- ___ 18. What is the voltage if the current is 4 A and the resistance is 10 Ω ?
- a. 4 V
 - b. 40 R
 - c. 10 V
 - d. 40 V
- ___ 19. How much electrical energy does a 75 W light bulb use if it is on for 4 hours?
- a. 0.150 kWh
 - b. 150 W
 - c. 0.300 kWh
 - d. 300 W
- ___ 20. In the formula $P = V \times I$, what does the I stand for?
- a. current
 - b. intensity
 - c. voltage
 - d. resistance
- ___ 21. What is the resistance of a circuit that draws a 1.5 A when 3.0 V are applied?
- a. 2 volts
 - b. 2 amps
 - c. 2.5 ohms
 - d. 2 ohms
- ___ 22. What is the relationship between current, resistance, and potential difference?
- a. charge
 - b. Ohm's law
 - c. conduction
 - d. friction
- ___ 23. When you shuffle your feet on the carpet on a dry day, you get a shock from the metal objects that you touch. What is the cause of this?
- a. conduction
 - b. electric current
 - c. induction
 - d. friction
- ___ 24. Circuits need three basic parts—an energy source, wires, and what else?
- a. charge
 - b. force
 - c. load
 - d. energy
- ___ 25. In a short circuit, as the resistance decreases, what happens to the current?
- a. increases
 - b. decreases
 - c. does not change
 - d. drops to 0 A
- ___ 26. The size of an electric force depends upon which two things?
- a. the amount of each charge and the size of the electric field
 - b. the distance between the charges and the size of the electric field
 - c. the number of protons and the distance between the charges
 - d. the amount of each charge and the distance between the charges

- ___ 27. What method is involved when charges in an uncharged metal object are rearranged without direct contact with a charged object?
- friction
 - induction
 - convection
 - conduction
- ___ 28. A video monitor draws 1.5 A at a voltage of 150 V. What is the power rating of the monitor?
- 220 W
 - 225 W
 - 150 W
 - 2,250 W
- ___ 29. Which of these would lower the electrical resistance of a wire?
- making the wire thinner
 - increasing the wire's length
 - lowering the temperature of the wire
 - none would lower the resistance
- ___ 30. What is the rate at which charges pass a given point?
- electrical energy
 - ohms
 - electric current
 - voltage
- ___ 31. As voltage gets larger, what happens to the current?
- The current stays the same.
 - The current gets larger.
 - The current gets smaller.
 - The current drops to 0 A.
- ___ 32. What is a circuit where loads are connected side by side?
- parallel
 - voltage
 - series
 - breaker
- ___ 33. What is a circuit where all parts are connected in a single loop?
- parallel
 - voltage
 - series
 - breaker
- ___ 34. An electroscope can determine which of the following?
- whether or not an object is charged
 - the material that a charged object is made of
 - the strength of the charge on an object
 - how many electrons are involved in the charge



Use the picture below to answer the question.

- ___ 35. What type of circuit is represented above?
- an intersecting circuit
 - a series circuit
 - a parallel circuit
 - a direct circuit
- ___ 36. Good conductors have low
- voltage.
 - resistance.
 - current.
 - temperature.

Completion

Complete each statement. by matching the letter with the proper number, there will be some words left over.

37. Metal cords are often covered in plastic and have metal prongs.
This is because metal is a good _____
38. and plastic is a good _____.
39. If the potential difference is increased, the current
_____.
40. Another word for potential difference is
_____.
41. Thin wires have a _____ resistance than
thick wires.
42. Short wires have a _____ resistance than
long wires.
43. An object's resistance depends upon the object's material,
thickness, length, and _____.
- a. temperature
b. lower
c. decreases
d. insulator
e. voltage
f. increases
g. resistance
h. current
i. higher
j. conductor

Complete each statement. by matching the letter with the proper number, there will be some words left over.

44. Plastic, glass, wood, and air are examples of good
_____.
45. Electrons moving in a wire make up _____
and provide energy to the things that you use each day.
46. Burglar alarms are best wired using a(n)
_____.
47. When the voltage is in volts and the current is in amperes,
_____ is expressed in watts.
48. When your clothes come out of the dryer stuck together, they are full of
_____.
- a. electric current
b. series circuit
c. electrical insulators
d. electric power
e. electrical
f. voltage
g. static electricity

Multiple Choice

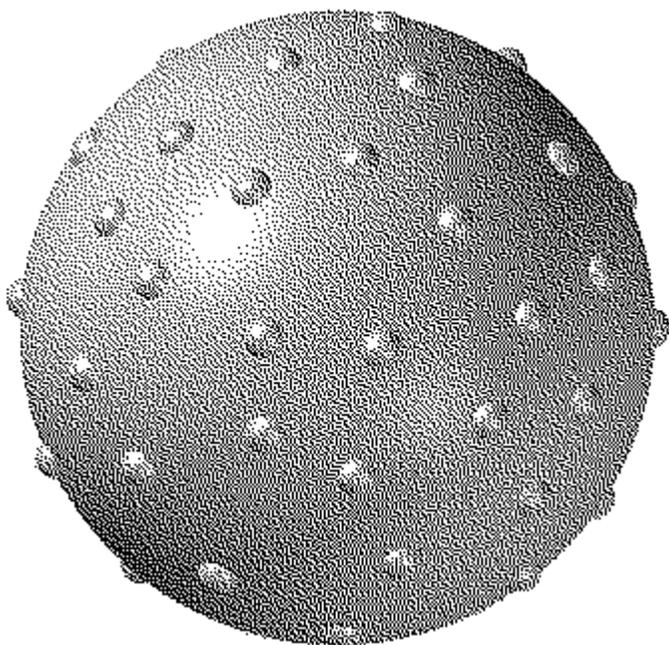
Identify the choice that best completes the statement or answers the question.

- _____ 49. When is an object magnetic?
- a. when it only has a north pole
b. when it only has a south pole
c. when it is free to rotate
d. when domains align

- ___ 50. Which of the following are two effects of Earth's magnetic field?
- compass points to geographic north, auroras seen at the equator
 - compass points to geographic south, auroras seen at the equator
 - compass points to magnetic north, auroras seen at both poles
 - compass points to geographic north, auroras seen at both poles
- ___ 51. Whether a material is magnetic or not depends on which of the following?
- the material's weight
 - the material's mass
 - the material's atoms
 - the material's density
- ___ 52. A compass needle responds to a magnetic field, because the compass needle is a
- transformer.
 - generator.
 - motor.
 - magnet.
- ___ 53. What can demagnetize a magnet?
- high altitudes
 - low altitudes
 - high temperatures
 - low temperatures
- ___ 54. A coil of wire that has a soft iron core and that acts as a magnet when an electric current is in the coil is called a(n)
- ferromagnet.
 - electromagnet.
 - permanent magnet.
 - temporary magnet.
- ___ 55. What can you make visible by sprinkling iron filings around a magnet?
- the areas called domains
 - the magnetic field lines
 - the magnetic forces
 - the north and south poles
- ___ 56. What creates a magnetic field?
- an atom's moving neutrinos
 - an atom's moving neutrons
 - an atom's moving electrons
 - an atom's moving protons
- ___ 57. When domains of atoms line up, what do they create?
- an electric current
 - a magnetic field
 - an aurora
 - a ferromagnet
- ___ 58. Where are the strongest magnetic effects on magnets?
- in the middle of the magnet
 - at both poles of the magnet
 - at only the magnet's north pole
 - only at the magnet's south pole
- ___ 59. Which of the following are two kinds of magnets?
- magnetic fields, magnetic poles
 - ferromagnets, electromagnets
 - magnesia magnets, magnetite magnets
 - atoms, domains

- ___ 60. What do spinning electric charges generate?
a. a magnetic force
b. a ferromagnet
c. an electromagnet
d. an aurora
- ___ 61. What uses an electromagnet to measure electric current?
a. armature
b. commutator
c. galvanometer
d. solenoid
- ___ 62. What is the cause of earth's magnetic fields?
a. its solid inner core
b. magnets put deep in the ground
c. its middle core
d. its liquid outer core
- ___ 63. What particle did J. J. Thomson discover?
a. neutron
b. electron
c. atom
d. proton
- ___ 64. What did Democritus, Dalton, Thomson, Rutherford, and Bohr all have in common?
a. They each identified new elements.
b. They each identified new isotopes of atoms.
c. They each contributed to the development of the atomic theory.
d. They each conducted experiments in which particles collided.
- ___ 65. An atom of gold with 79 protons, 79 electrons, and 118 neutrons would have a mass number of
a. 39.
b. 158.
c. 197.
d. 276.
- ___ 66. Which of the following has the least mass?
a. nucleus
b. proton
c. neutron
d. electron
- ___ 67. If an isotope of uranium, uranium-235, has 92 protons, how many protons does uranium-238 have?
a. 92
b. 95
c. 143
d. 146
- ___ 68. An atom of carbon with 6 protons, 6 electrons, and 6 neutrons would have a mass number of
a. 6.
b. 18.
c. 12.
d. 15.
- ___ 69. What is the meaning of atom?
a. "dividable"
b. "invisible"
c. "hard particles"
d. "not able to be divided"
- ___ 70. Which statement about isotopes is true?
a. They have the same number of protons.
b. They have the same number of neutrons.
c. They have a different atomic number.
d. They have the same mass.
- ___ 71. According to Rutherford, what was in the center of an atom?
a. an electron
b. a nucleus
c. a particle
d. a proton

Use the figure below to answer the following two questions.



- ___ 72. Who proposed this new model of an atom?
- a. Bohr
 - b. Thomson
 - c. Rutherford
 - d. Democritus
- ___ 73. The raised surfaces show
- a. protons.
 - b. electrons.
 - c. neutrons.
 - d. isotopes.
- ___ 74. A charged particle is called a(n)
- a. atom
 - b. isotope
 - c. ion
 - d. element
- ___ 75. The approximate composition of naturally occurring magnesium is as follows: 79% magnesium-24, 10% magnesium-25, and 11% magnesium-26. Calculate the atomic mass of magnesium.
- a. 243.2 amu
 - b. 2.43 amu
 - c. 24.32 amu
 - d. 2432 amu
- ___ 76. Medeleev's Periodic Table was arranged by what?
- a. atomic number
 - b. atomic mass
 - c. chemical name
 - d. families
- ___ 77. How is Hydrogen set apart from other elements?
- a. It doesn't share properties of any other element.
 - b. It doesn't share properties of any other group.
 - c. It doesn't react with other elements.
 - d. It is a very rare element.

- ___ 78. Which of the following **is not** a property of metals?
- They have are shiny/ they have luster.
 - They are malleable, being hammered into thin sheets.
 - They are ductile, being drawn into thin wire.
 - They aren't good conductors of heat and electricity.
- ___ 79. How many valence electrons are in the element of Bromine?
- 4.
 - 8
 - 7
 - 6

___ 80. Of the elements: **Gold, Krypton, Lithium, Platinum, Potassium, Silicon**

Which of the following are in order from most reactive to least reactive?

- Lithium, Potassium, Gold, Platinum, Silicon, Krypton
 - Potassium, Lithium, Platinum, Gold, Silicon, Krypton
 - Potassium, Lithium, Silicon, Platinum, Gold, Krypton
 - Lithium, Potassium, Platinum, Gold, Silicon, Krypton
- ___ 81. Which family of metals is the most reactive?
- | | |
|---------------------|--------------------------|
| a. All are the same | c. Alkaline-Earth Metals |
| b. Alkali Metals | d. Transition Metals |

___ 82. When the repeating chemical and physical properties of elements change periodically with the elements' atomic numbers is called what?

- | | |
|-----------------------|-----------------|
| a. The Periodic Table | c. Groups |
| b. Families | d. Periodic Law |
- ___ 83. Atoms want how many valence electrons to be happy?
- | | |
|------|------|
| a. 6 | c. 2 |
| b. 4 | d. 8 |

___ 84. The Halogens combine with metals to form what?

- | | |
|---------------|----------------|
| a. Gases | c. Salts |
| b. Metalloids | d. Noble Gases |