PHYS 202    Study Guide for Test #2    Chapters 19, 20 and 21

Test will consist of MC questions, questions, and problems.

1. Understanding terms: Electric charges (positive and negative), test charge, conductors, insulators, dielectrics, electron-volt (eV), killo-watt-hour (kWH), electromotive force, resistance, and resistivity.

2. Defining terms: Electric field, electric potential, capacitance, electric current and electric power.

3. Know the following:

* a. Draw equipotential lines and electric field lines of point charges and extended charges.
* b. How to find the total electric potential due to a set of point charges.
* c. Dealing with capacitors, dielectrics, and energy stored in capacitors.
* d. How to use Ohm's law in circuit analysis.
* e. Combining resistors to find the equivalent resistance.
* f. Combining capacitors to find the equivalent capacitance.
* g. How to use Kirchhoff's rules in circuit analysis.
* h. Biomedical applications of electric potential differences: EKG/ECG, EEG, ERG.
* i. Conceptual understanding of RC circuits.
* J. Calculating the cost of electricity.

4. Equivalent resistance and capacitance of networks:

|  |  |  |
| --- | --- | --- |
| Combination | Resistors | Capacitors |
| Series |  |  |
| Parralel |  |  |

5. Electric potential due to a point charge at a distance r:    

6. Ohm’s law: V = IR Electric Power = P = IV Electrical energy =IVt

7. Resistance in terms of resistivity and dimensions: $R=ρ\frac{L}{A}$

8. Capacitors:   