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 electric field lines and equipotential 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. Combining resistors to find the equivalent resistance.  
e. Combining capacitors to find the equivalent capacitance.  
f. How to use Ohm's law in circuit analysis.  
g. How to use Kirchhoff's rules in circuit analysis.   
h. Biomedical applications of electric potential differences: EKG/ECG, EEG, ERG.   
i. Calculating the cost of electricity.  
j. RC circuits and applications.

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:

8. Capacitors:   