PHYS 202    Study Guide for Test #2    Chapters 18, 19, and 20

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

2. Define the following: Electric field, electric potential, capacitance, electric current, and electric power.

3. Know the following:

* a. How to charge an object by contact and by induction.
* b. Coulomb's law and how to use it to find the force, including net force between charges.
* c. Draw equipotential lines and electric field lines of point charges and extended charges.
* d. How to find the total electric potential due to a set of point charges.
* e. How to find the net electric field due to a set of point charges.
* f. How to use Ohm's law and Kirchhoff's rules in circuit analysis.

4. Equivalent resistance and capacitance of networks:

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

5. Coulomb's law:   

6. Electric field due to a point charge at a distance r:      

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

8. Ohm’s law: V = IR Electric Power = P = IV

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