PHYS 315   Circuit Analysis Study Guide for Final

Final exam format will be similar to past tests. Study the past two tests (Test #1 and Test #2) and the related materials.

All the equations given in this study guide will be given for the final exam.

1. Ohm’s law, electric power, determining equivalent resistance of various circuits, and finding the current through and voltage across individual resistors.

a. Ohm’s law: V=IR; b. Power = P = IV= I2R = V2/R

b. Series equivalent resistance (*Rs*) and parallel the equivalent resistance (*Rp*) are given by,  

2. Finding the equivalent capacitance for capacitance networks, and finding the charge and voltage across individual capacitors.

  

3. AC Circuits with capacitors, inductors, and resonance in RLC circuits.

  

 

 4. Analyzing circuits (finding the current through and voltage across individual elements) using the following methods:
a. Kirchhoff’s rules.
b. Mesh-current method.
c. Superposition method.
d. Source transformations.
e. Node-voltage method.
f. Thevenin and Norton equivalent circuits.

5. Designing and analyzing circuits with diodes and transistor (BJT) amplifier circuits.
$I\_{C}=βI\_{B}$ $r\_{e}=\frac{26 mV}{I\_{C}}$ $gain=-\frac{R\_{C}}{r\_{e}+R\_{E}}$ $V\_{BE}=0.7 v$

6. Designing and analyzing op-amp circuits.