

**MEDICAL ELECTRONICS 2007**  
**PROJECT ASSIGNMENT #1**

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1. Starting from a power source that supplies 5V at 40A, 12V at 20A, -5V at 1A, and -12 at 10A, design a power supply unit that allows the following outputs to be obtained:
  - a.  $\pm 15\text{V}$  at 5A
  - b. +150V at 0.1A
  - c. +100V at 0.1A
  - d. +24 at 5A
  - e. +3.3V at 10A
  
2. Repeat the above problem starting from a 220 AC power source.
  
3. Provide detailed specifications for power supply requirements in the following medical devices (voltage, current rating, and application within the machine):
  - a. Ultrasound imaging
  - b. Hemodialysis
  - c. Plain x-ray
  - d. Patient monitor
  - e. Electrosurgical unit
  - f. Ventilator
  - g. Muscle stimulator
  - h. Infant incubator

**Notes:**

1. Please submit one report for each group.
2. Grade will be same for all project members
3. Provide detailed circuit diagram including sources/prices for all components (BOM)
4. Due date: November 1<sup>st</sup>, 2007.