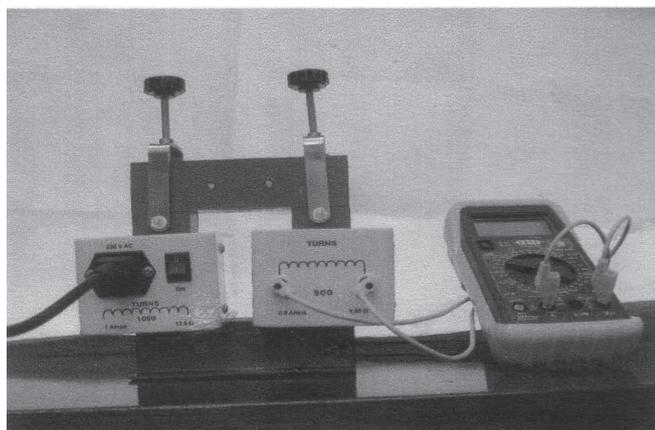## DEMOUNTABLE TRANSFORMER KIT

1. To set up the transformer unit, two coils are placed, one on each vertical side, on the core as shown in the photograph/diagram below:–

2. The top part of the core is placed on the vertical arms and then clamped firmly onto the arms.
3. Ideally, two a.c. voltmeters are used, one connected to the output coil and the other to the input coil.
4. Failing that, one voltmeter can be connected to the output coil if the input has been set to a fixed, known voltage. Digital voltmeters work very well for small class sizes. Bigger classes would benefit from using larger demonstration meters.

The transformer formula can be written as follows:—

Voltage out = number of turns on secondary coil
Voltage in   number of turns on primary coil

Where the primary is the input coil and the secondary is the output coil. This can be expressed as:—

The voltage ratio = the turns ratio

Method

1. To show how the transformer can step up or step down voltages, different coils are used on either side.
2. The 1000 turn mains coil can only be used as the input (primary) coil, any other set up would be exceedingly dangerous.
3. Initially use the 1000 turn mains coil as the input and the 500 turn coil as the output. Do not try to measure the mains input voltage as it would be dangerous and it will be at around 230V.
4. Using the voltmeter on a suitable scale measure the output voltage, use well insulated wires as it should be at 115V. This is a step down transformer.
5. Keeping the 500 turn coil in position, then replace the 1000 turn coil with a 50 turn coil, connect it to an a.c. power pack set to 5V, the output voltage on the secondary coil should read about 50V as the turns ratio is 10 so the output voltage should be 10 times the input voltage.
6. Repeat the above procedure with different coils on both sides of the core to prove the transformer formula.

Question

Can you list jobs your body needs the energy for?