

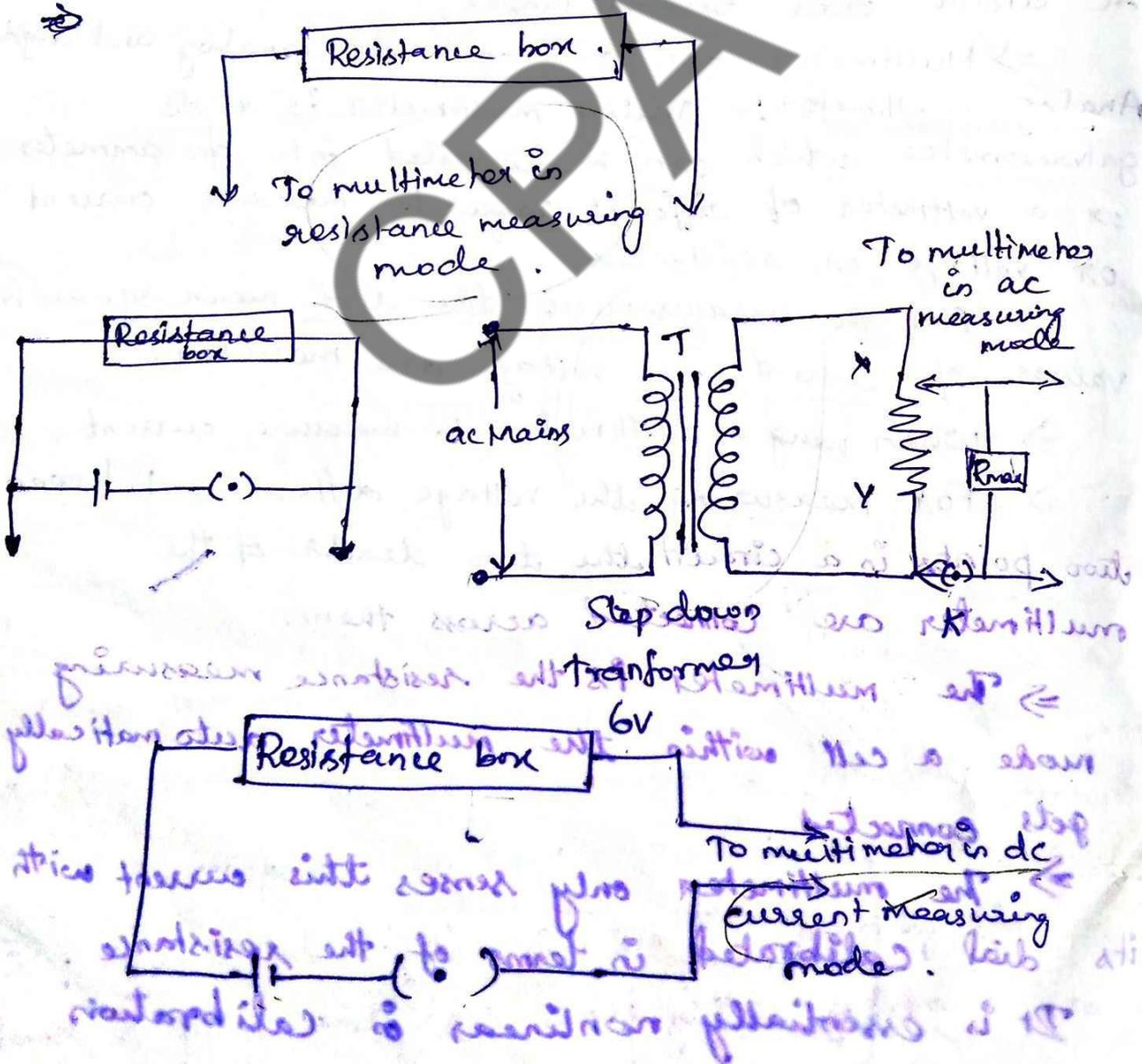
# Digital multimeters :-

⇒ To measure voltage and current it uses a digital circuit called ADC (analog to digital converter).

⇒ Since the ADC can accept a very small input voltage a sampling of the input voltage / current

⇒ Voltage is measured directly whereas current is converted into proportional voltage using standard resistors built in the instrument.

⇒ For resistance measurement constant current sources are used. It creates voltage proportional to resistance values which is then digitised by the ADC.



⇒ The resolution of such meters depends on the range as well as the number of digits in the display panel.

⇒ When the resistance  $R$  is connected in a circuit, the potential difference across the two end point of the resistor can be measured by connecting the multimeter in parallel with the resistor.

⇒ The coil of the multimeter shows a deflection proportional to the direct current (dc) passing through it. Measurement of alternating current is based on the principle of heating effect of current.

⇒ The current flowing through the resistor can be measured by connecting the multimeter in series.

⇒ The continuity of any electrical component can be checked by measuring the resistance of the components. An infinite resistance across the two ends of a component, indicates a discontinuity.

⇒ A very low resistance ( $< 0.1 \Omega$ ) between the two ends of a component indicates that the component under test has a short circuit.