Expt. No. _____ Date _____

Page No. _____

Experiment - 1

Aim - (a) Introduction to CRO, function generator, multimeter, breadboard, D.C power supply

(b) Identification of various components i.e resistors, capacitor, inductor, diode, transistor, IC's

Theory:

(a) Introduction to CRO - The cathode ray oscilloscope (CRO) is a common laboratory instrument that provides accurate time and amplitude measurements of voltage signal over a wide range of frequencies. Its sensitivity, stability and ease of operations make it suitable as a general purpose laboratory instrument. The heart of the CRO is a cathode ray tube.

Electrons leave the heated cathode by thermionic. They are accelerated through a fixed voltage and emerge as a narrow beam focussed through a hole in the deflection plate.

(b) CRO control numbers

5 - Power
7 - Beam intensity
8 - Beam focus
10 - Vertical axis sensitivity
11 - Vertical position.

Teacher's Signature _____

Expt. No. _____ Date _____

Page No. _____

12 - AC DC input selector
13 - GrNO ground switch
14 - Vertical input
15 - Vertical axis sensitivity, Range selection in Volts
16 - External trigger input
17 to 21 - Horizontal sweep timer controls
22 - Horizontal sweep time : Variable fine adjustment
23 - Horizontal sweep time : Range selection in time / DIV
24 - Horizontal position.

(c) Introduction to function generator

In the laboratory is used to produce AC signals of various types is called the function generator. The process is quite simple. Firstly the frequency is adjusted to the correct value i.e if we require 12.5 KHz, we use the frequency control to 12.5 and then depress the range selection switch corresponding to a 1 KHz multiplier and the output will be as required.

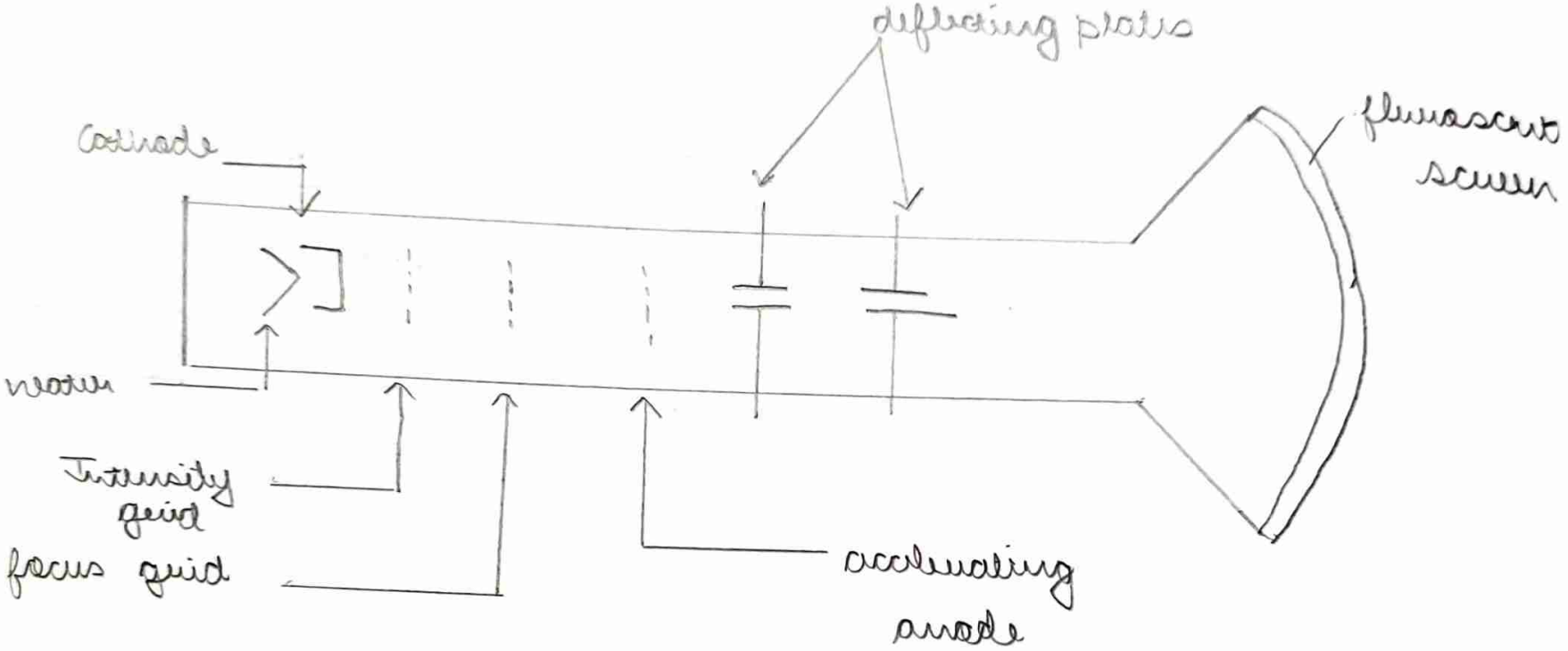
(d) Introduction to digital multimeter

The DMM is used to make measurements of voltage current and resistance. Both AC and DC signals can be measured using the DMM.

(e) Introduction to breadboard

A breadboard is used to make up temporary circuits for testing or to try out an idea. No soldering is required so it is easy to change connections and replace components. Parts will not be damaged so they

Teacher's Signature _____



Cathode ray tube → Schematic

will be use afterwards.

(f) Introduction to DC power supply

It is easy to use, less power, for output general purpose laboratory supply. It is suitable for experiment setups circuit development and low voltage application.

The power supply delivers:-

- 0-32 V dc circuit, continously variable, with 2 Amp capacity.
- 5V preset with 5 Amps capacity.
- 15V preset dc output with 1500 mA.

(g) Resistor

- The property of a substance which opposes the flow of electric current is called resistance.
- The two main characteristic of resistor are its resistance in ohm and its power rating is watt.

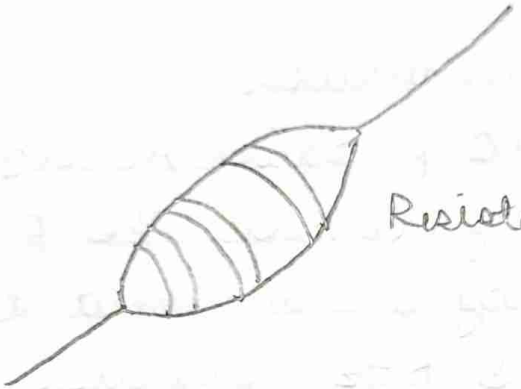
(h) Capacitors

The capacitor is a positive component which stores the electrical energy in the electric field when current passes through it. Types of capacitors:

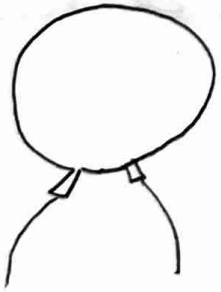
- Ceramic capacitors
- Electrolytic capacitors.

(i) Inductor

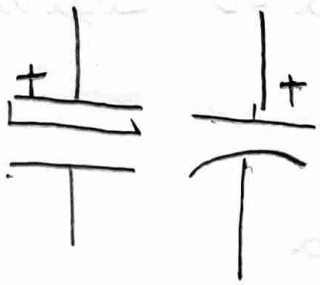
The inductor is a passive component which stores the electrical energy in the magnetic field when the



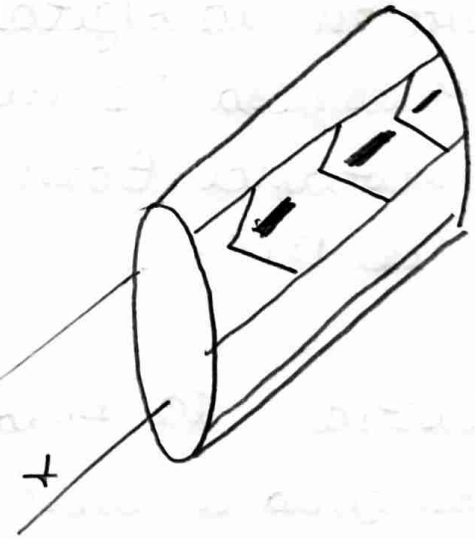
Resistor



Ceramic Capacitor



Symbols



Electrolytic Capacitor

Expt. No. _____ Date _____

Page No. _____

electric ~~circuit~~ current passes through it. The ratio of the flux and the current gives inductance.

$L = \frac{\Phi}{I}$ → flux

I → current

Inductance