

Oscilloscope

1- Purpose of the experiment:

The aim of this work is to manipulate the oscilloscope and the GBF (Low Frequency Generator) through:

- ✓ Know how to use the multiple controls visible on the front of each device.
- ✓ Know how to perform amplitude (voltage), frequency and phase shift measurements.

2- Preparation work:

Before arriving at the laboratory, prepare a short presentation (03 pages maximum), discuss the following points:

1. Definition and description of a Cathode Oscilloscope.
2. Operating principle and scope of use of an Oscilloscope.
3. Handling and use of an Oscilloscope.

3- Handling:

3-1. Materials used:

- ✓ A Cathode Oscilloscope.
- ✓ A DC (contained current) and AC (alternating current) voltage generator.
- ✓ A low frequency generator (GBF).
- ✓ Resistor and capacitor boxes.
- ✓ Voltmeter (or multimeter).



Oscilloscope

3-2. Essay 1:

Plot a DC signal and an AC signal

Before you start:

1°/ Locate the buttons on the oscilloscope which allow:

- a) Switch on the device.
- b) To adjust the brightness and fineness of the “line or spot”.
- c) To adjust the fineness of the “line or spot”.
- d) To center the “line or spot” on the screen, in, and in,
- e) To change the scanning speed of the spot.
- f) To change the vertical sensitivity of channel A (or 1).

2°/ Repair the input of channels A (or 1): YA, Y1 or CH1 and B (or 2): YB, Y2 or CH2.

A continuous tension:

- ✓ Measure the value of $E = \dots V$ with a voltmeter (or multimeter).
- ✓ Connect the oscilloscope to the generator according to the assembly indicated in table 1.
- ✓ Operate the oscilloscope, then set it (choose the light spot, the origin of the times).
- ✓ Draw the signal obtained, by putting the oscilloscope in the DC position, then in the AC position.
- ✓ Note your remarks and comments.

An alternating voltage:

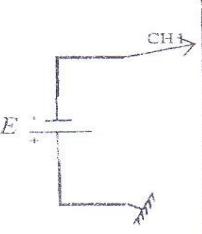
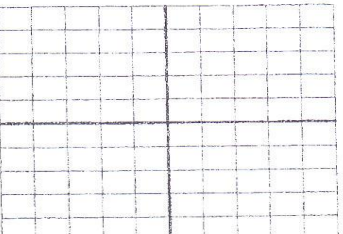
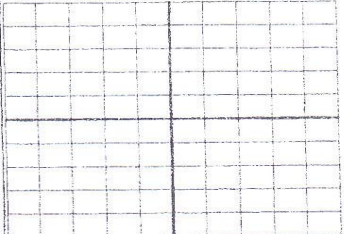
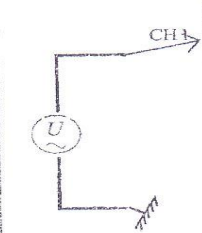
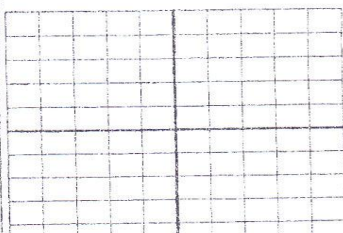
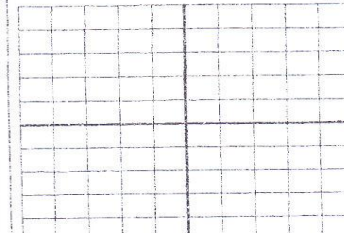
- ✓ Do the same work, for an alternative generator?
- ✓ Measure the peak-to-peak amplitude ($U_{c\grave{a}c}$), the maximum value U_{max} , the period T and the frequency f ?
- ✓ What does the value measured by the voltmeter (or multimeter) mean in this case?

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An alternating voltage :

- ✓ Do the same work, for an alternative generator?
- ✓ Measure the peak-to-peak amplitude ($U_{c\grave{a}c}$), the maximum value U_{max} , the period T and the frequency f ?
- ✓ What does the value measured by the voltmeter (or multimeter) mean in this case?

Table 1:

Montage	Position DC		Position AC		Remarques et résultats
					
	Sen. Horiz. $S_h = \dots$ ms/div	Sen. Vert. $S_v = \dots$ V/div	Sen. Horiz. $S_h = \dots$ ms/div	Sen. Vert. $S_v = \dots$ V/div	
					
	Sen. Horiz. $S_h = \dots$ ms/div	Sen. Vert. $S_v = \dots$ V/div	Sen. Horiz. $S_h = \dots$ ms/div	Sen. Vert. $S_v = \dots$ V/div	