

## LISTEN AND ANSWER N°1 (necessity to convert AC to DC)

### PART 1

Watch the video “listen and answer N° 1” (physiqueh qe website)

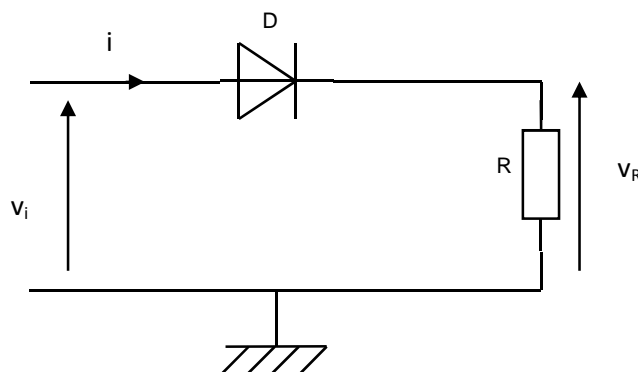
*You can use the questions below to organize or support your presentation, but feel free to use them in any order you like. You can also use your knowledge to make your exposé.*

- Make an introduction about the exposé you will present.
- What type of voltage do power plants produce?
- Power plants normally produce high RMS voltages. What is the value of the RMS voltage used at home? What device is used to convert high AC voltages into low AC voltages?
- Give at least 3 cases where DC voltage is used and what device is normally used to convert AC into DC.
- In the video what vegetable is used to produce DC voltage?
- The energy obtained by the process is a clean one. Discuss.
- What other clean energy can be used to produce DC.
- Make a conclusion.

### PART 2

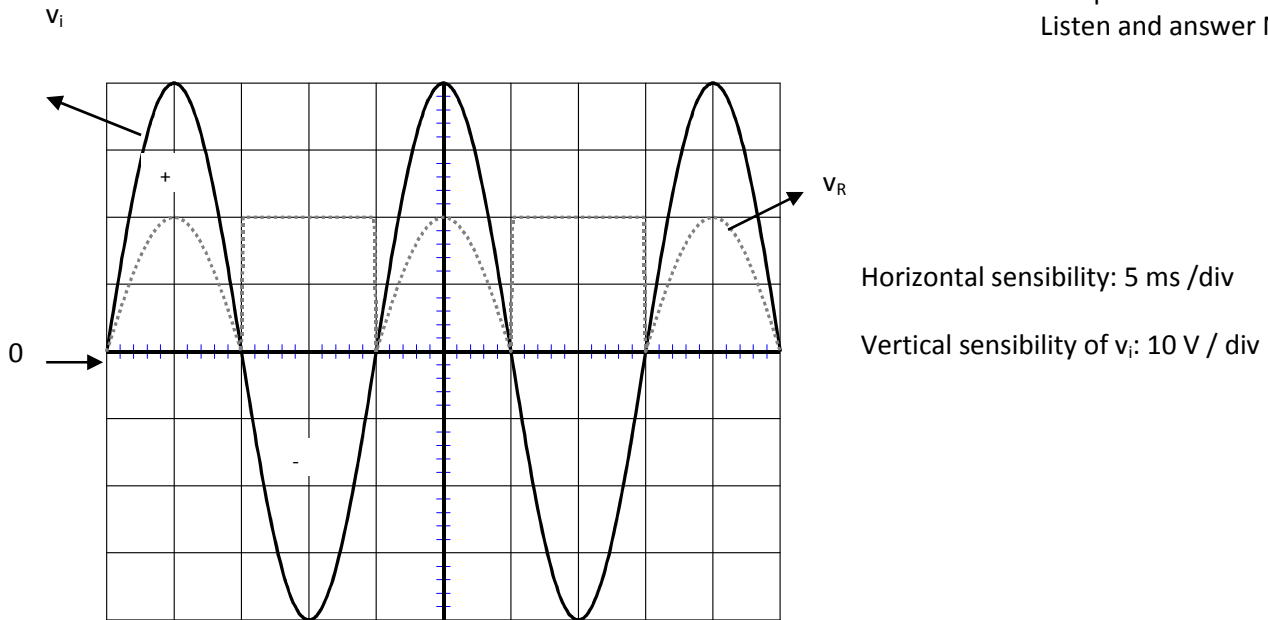
#### Rectifier circuit

We are going to consider the following rectifier circuit.



Diode  $D$  is supposed to be ideal and  $R = 10 \text{ k}\Omega$

Input voltage  $v_i$  delivered by the secondary of a transformer and output voltage  $v_R$  are observed on a cathode ray oscilloscope.



- Give the full name of the circuit.
- Give the mean value of  $v_i$ . Justify your answer.
- Determine the period and frequency of  $v_i$ .
- Determine the peak value of  $v_i$  and hence calculate its RMS value.
- Discuss about the biasing of the diode when  $v_i$  is positive.
- Discuss about the biasing of the diode when  $v_i$  is negative.