جامعة فلسطين التقنية - خضوري

Palestine Technical University-Kadoorie

PTU Kadoorie خضوري

دولـــة فلســـطين

وزارة التعليـم العـالي والبحـث العلمي

State of Palestine

Ministry of Higher Education & Scientific Research

Electronics lap report

College of Engineering and technology

Student name : Areej Amer

Student ID :202110242

Exp name : half wave rectifier

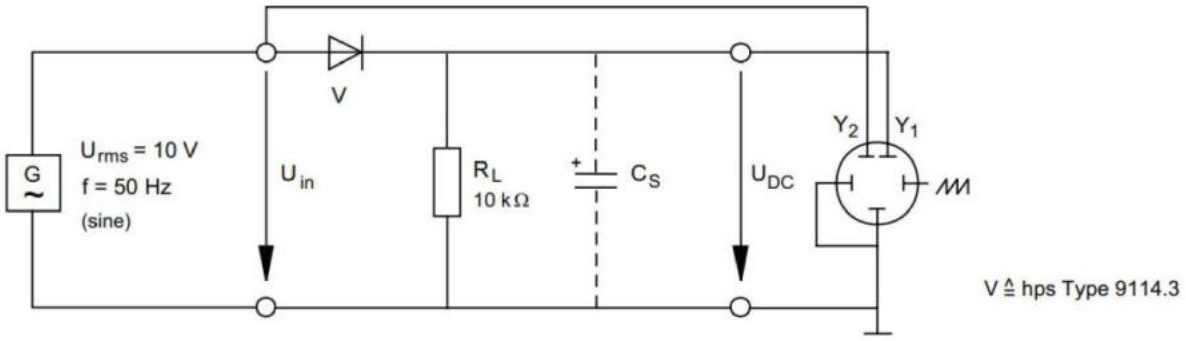
Date : 7/4/2024

Day : Sunday

Teacher name :Muath Wahdan

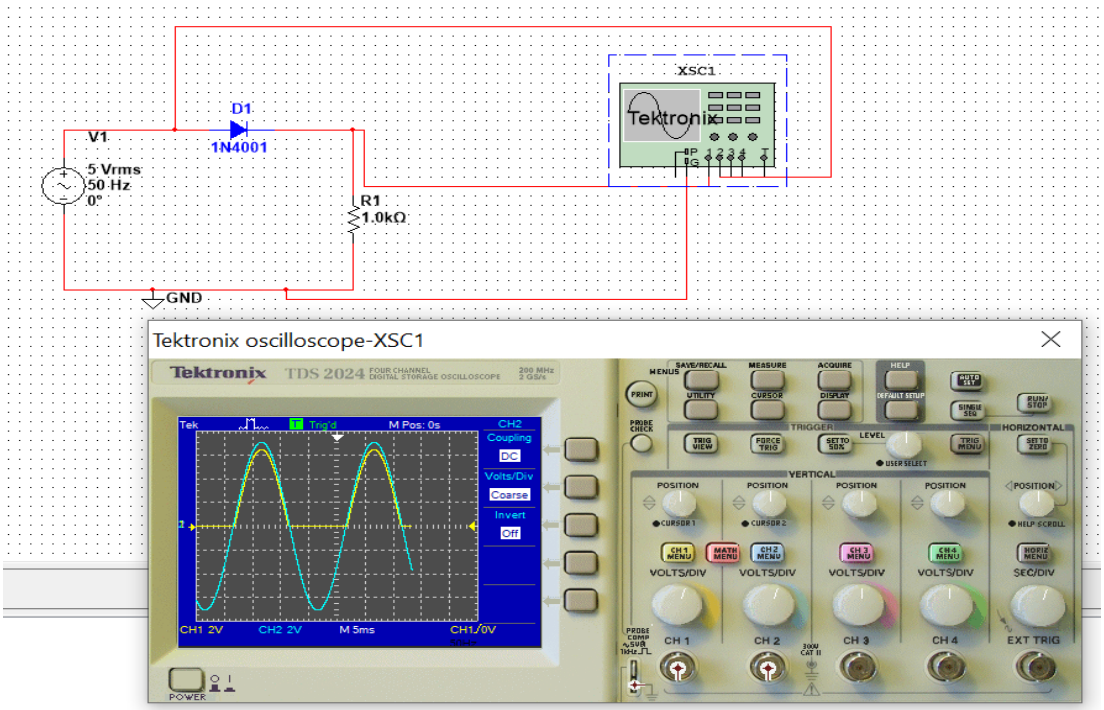
Devices and tools used:

1- A simulation program for electronic circuits
2- Wires
3- Two devices for measuring current and measuring voltage
4- Osliscope
5- Power source
6- Diode
7- Resistance 10 kilo ohm
5- Capacitor

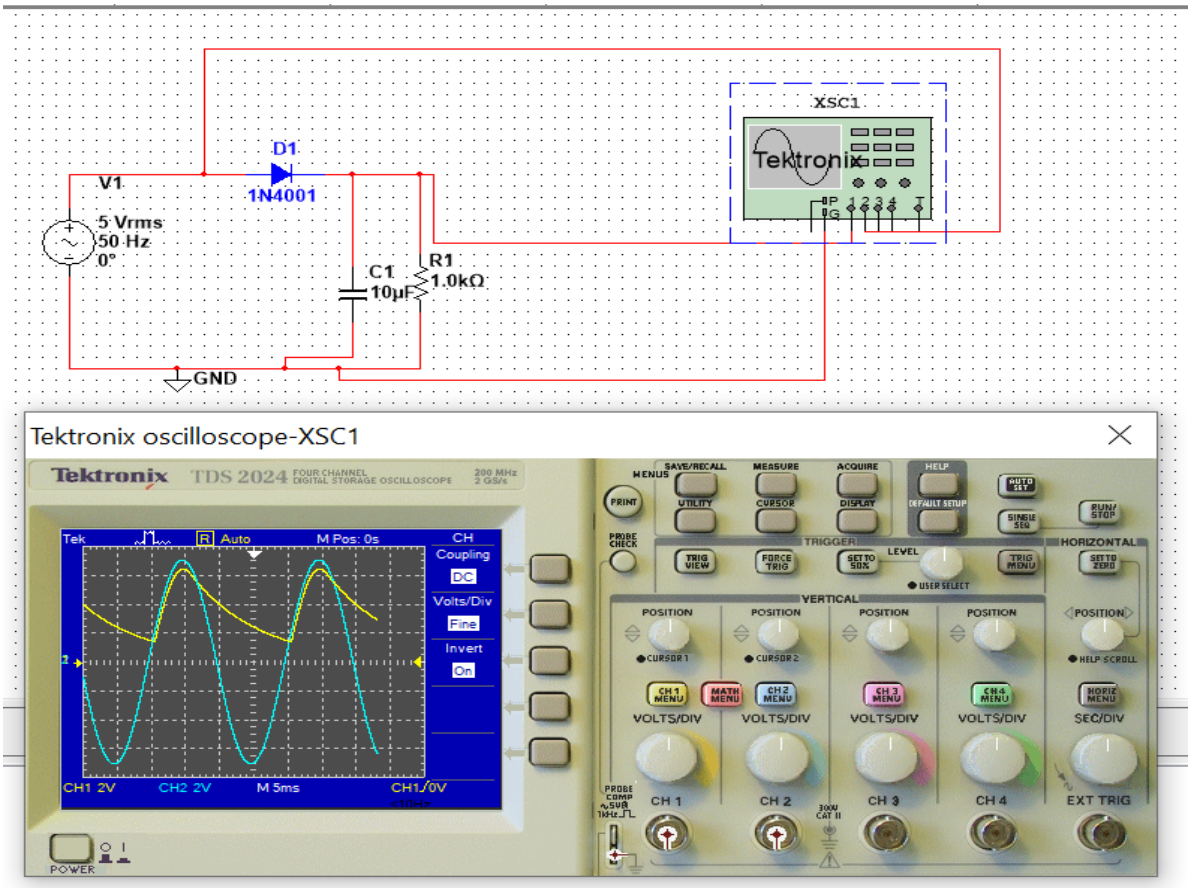


***This is the circuit that will make and take readings and result from**

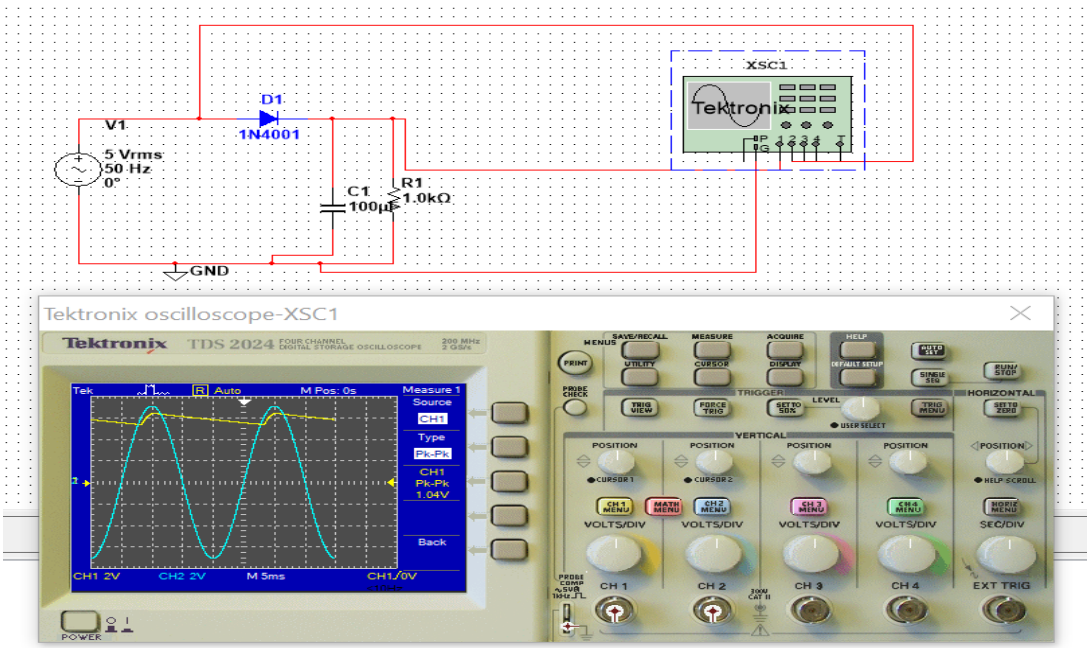
Signal without capacitor :the output is the Yellow waveform



***The signal with capacitor 10MF ::the output is the Yellow waveform**



***The signal with capacitor 10MF ::the output is the Yellow waveform**



***The signal with capacitor 470MF ::the output is the Yellow waveform**

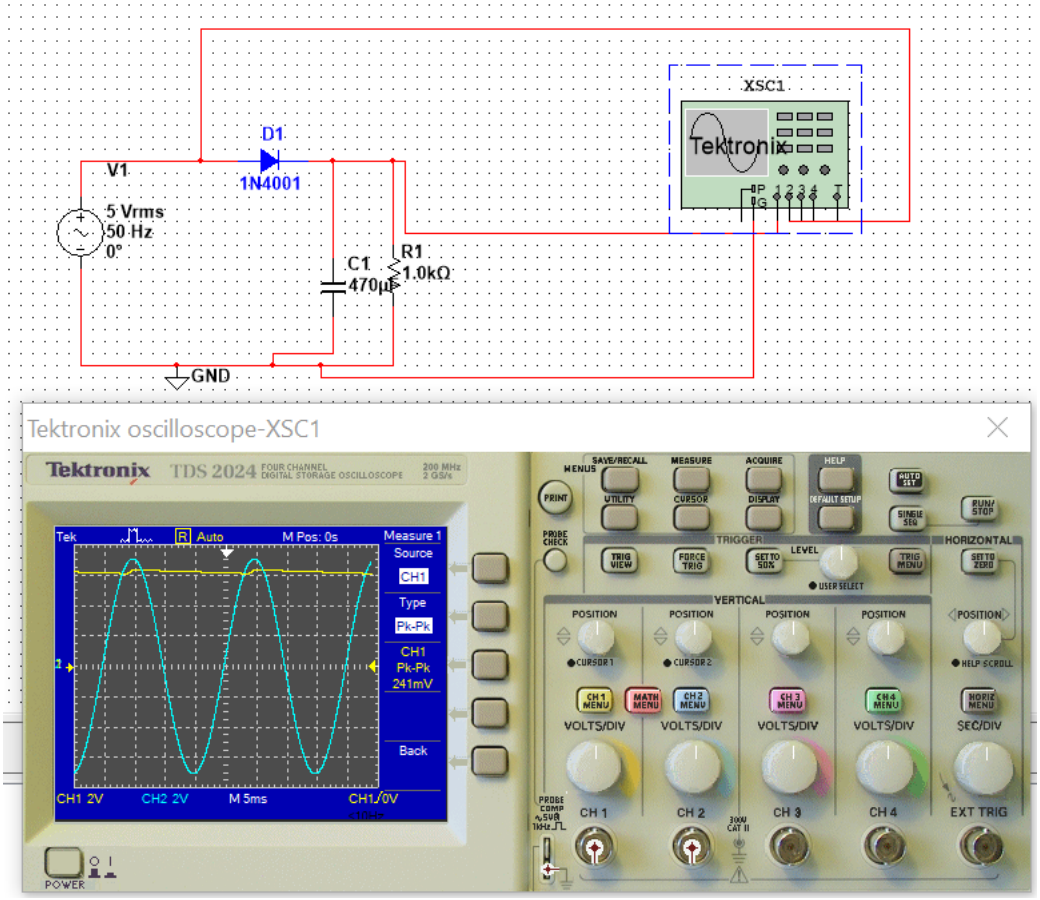


Table and results :

Cs[MF]	without	10MF	100MF	470MF
Vin[peak]	5	5	5	5
Vin |rms|= Vin[peak]/	1.53v	1.53v	1.53v	1.53v
Vdc[V]	1.69v	3.662v	5.887v	6.218v
Vdc/Vin	0.338	0.73	1.17	1.24
Vrip pp[V]	6.44v	5.03v	1.04v	214mv
Frip[Hz]	50	50	50	50

Question 1: What is the frequency of the ripple voltage V rip?

Answer: For Half wave rectifier frip = fin, So it's 50 Hz for all.

Question 2: What happens if the polarity of the diode in the circuit (Fig. 1.3.2.1) is reversed?

Answer: It will keep same size for voltage of but polarity will opposite.

Question 3: At which connection of the diode is the plus pole of the resultant DC voltage VDC?

Answer: This allows current to flow during the positive half-cycle (when the anode is more positive than the cathode), which results in a positive DC voltage.

Question 4: What is the off-state voltage effective on the diode with smoothing capacitor CS?

Answer: The off-state voltage on the diode with a smoothing capacitor is the residual ripple voltage after the capacitor has smoothed the rectified voltage. The exact value depends on the specific circuit components.

Question 5: What effect does the smoothing capacitor have on the peak-to-peak value of the ripple voltage?

Answer: The smoothing capacitor reduces the peak-to-peak ripple voltage. It charges when the rectifier voltage rises and discharges when it falls, smoothing the voltage. The size of the capacitor is critical: too small, and it won't smooth the voltage fully; too large, and it could overload the circuit. So, it's important to choose the right size for your application