Project Submission

Program: Junior – Electrical

Course Code: ECE211s

Course Name: Electronics

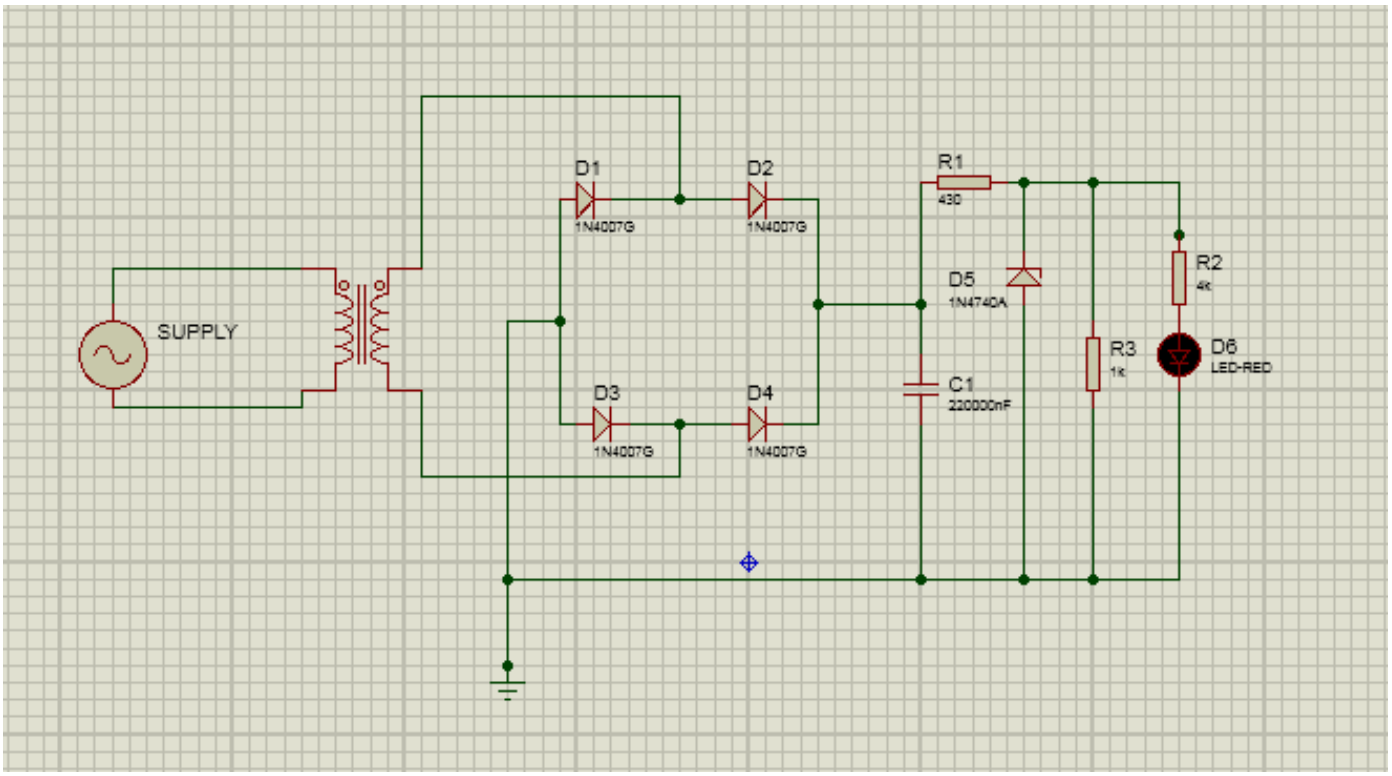
Name	ID
Omar Tamer Yehia	**2001709**
Abdallah Karim Motawee	**2000993**
Marco Adel Nagiub	**2001115**
Bigol Shereen	**2001632**

Ain Shams University
Faculty of Engineering

Fall Semester – 2022

PART 1

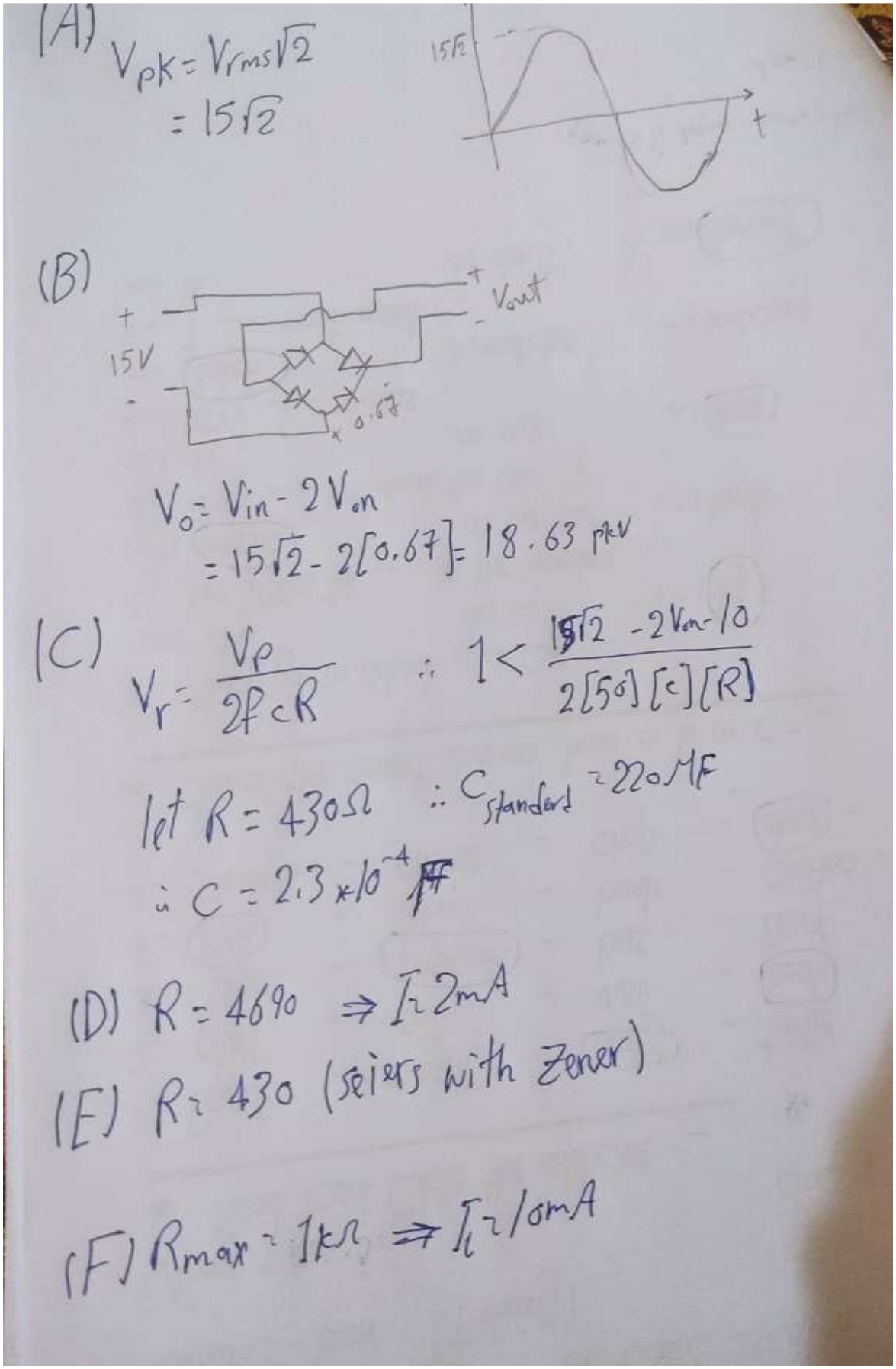
DETAILED SCHEMATIC OF THE CIRCUIT :



Components :

Part Name	Price (EGP)	Role
Transformer	70.00	Stepping down the voltage from 220V to 15V AC
Breadboard	45.00	
Resistors	2.50	Limiting the current
Capacitor 220uF	3.00	Reduction of the ripples using a peak rectifier circuit
Zener 10V	1.00	Regulation of the voltage at 10V
Red LED	0.50	Indicating the circuit power status (ON or OFF)
Diodes	1.00	Full AC wave Rectification to DC
PCB + Soldering	200	
TOTAL	323.00	

Analytical calculations :



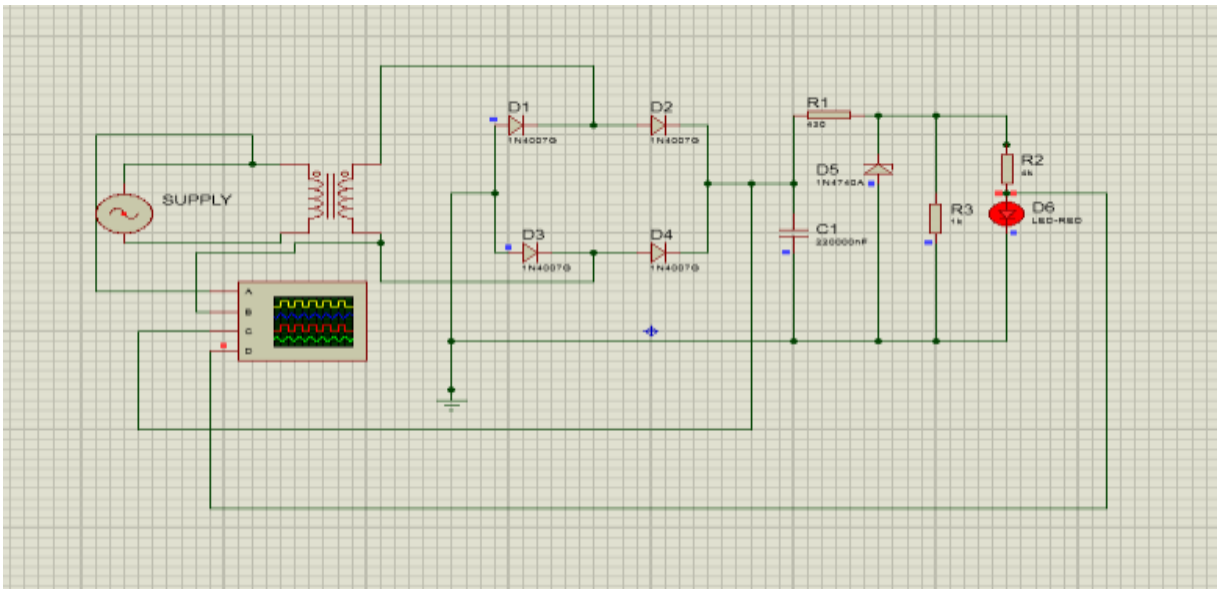
Pros and cons of using bridge rectifier compared to other types of rectifiers:

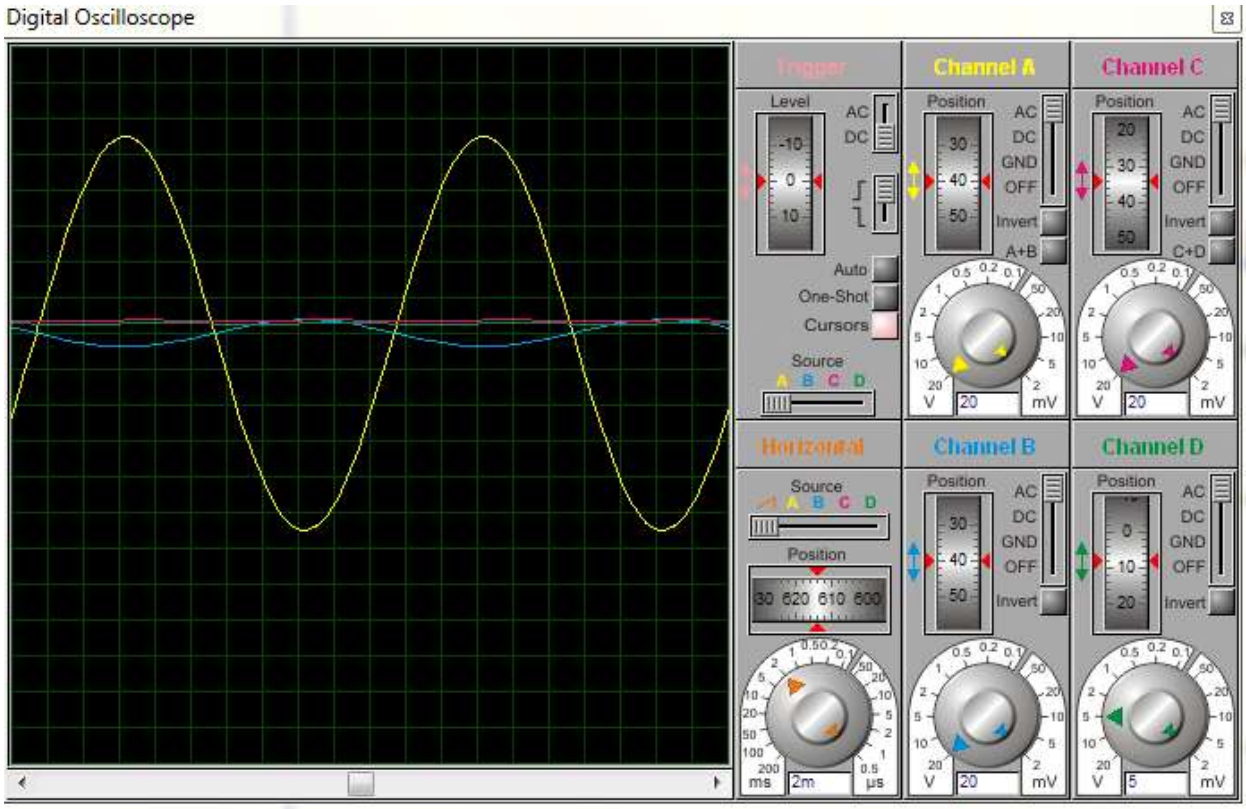
	Bridge Rectifier
Pros	Centre-tapped winding not required
	Less secondary winding
	Less PIV ($PIV = V_s - V_{ON}$)
Cons	4 diodes required

Pros and cons of using Zener shunt regulation compared to other types of regulators

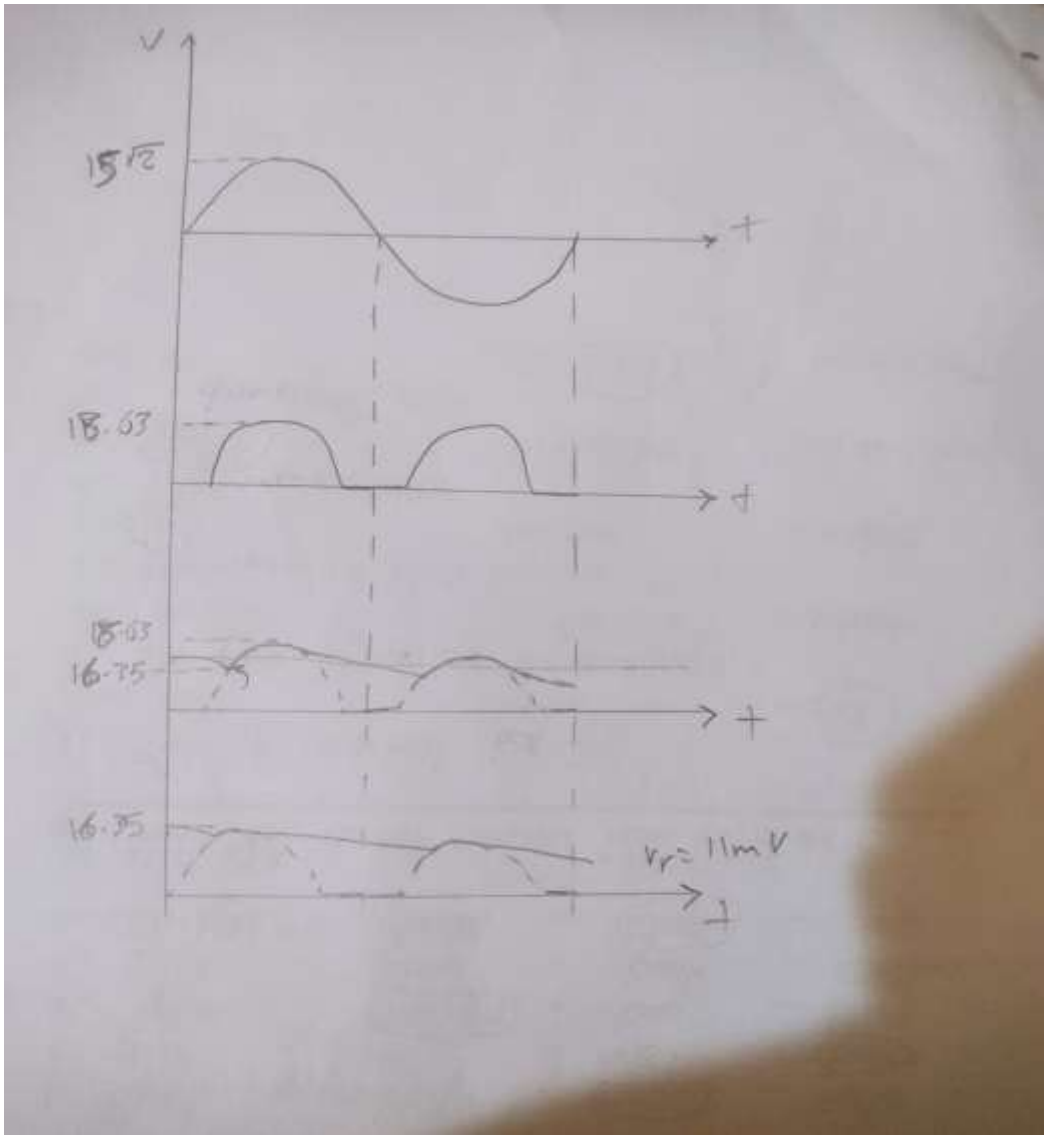
	Zener Shunt Regulator
Pros	Simple and low cost
	Provide higher current capability

Simulation with proteus :





Wave forms with hand :



Google drive link for a short video

https://drive.google.com/file/d/1QMwI4rU8PU41uNjYnuW-nxKvxzGL3LQs/view?usp=drivesdk

WITH BOUNCE : https://drive.google.com/file/d/1QzhFggOU_lBMrAiM6BB2izUor-L8Rbj-/view?usp=drivesdk

References:

[1] https://qr.ae/pGzgy3

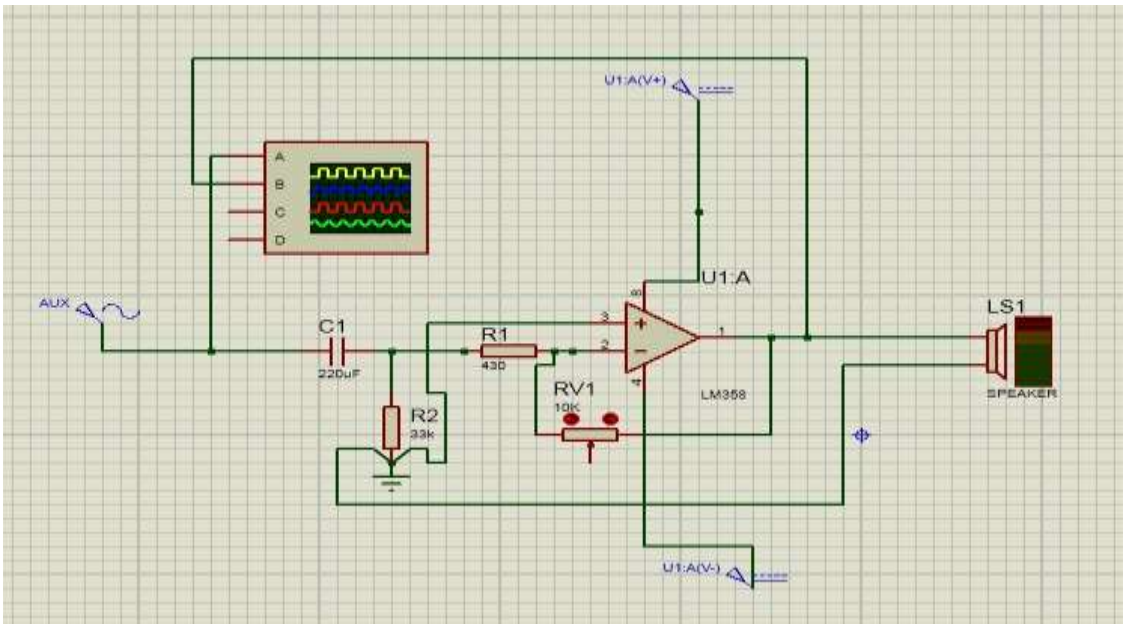
[2] https://www.master-micro.com/mastering-microelectronics/courses/introduction-to- electronics/course-resources

[3] http://www.learnabout-electronics.org/PSU/psu10.php

Name	Contribution
Omar Tamer Yehia	Schematic, Simulation, Implementation, PDF review
Abdallah Karim Motawee	Schematic, Simulation Implementation, Getting components
Marco Adel Nagiub	Simulation, Hand Analysis, PDF preparation
Bigol Shereen	Simulation, Hand Analysis, PDF preparation

PART 2

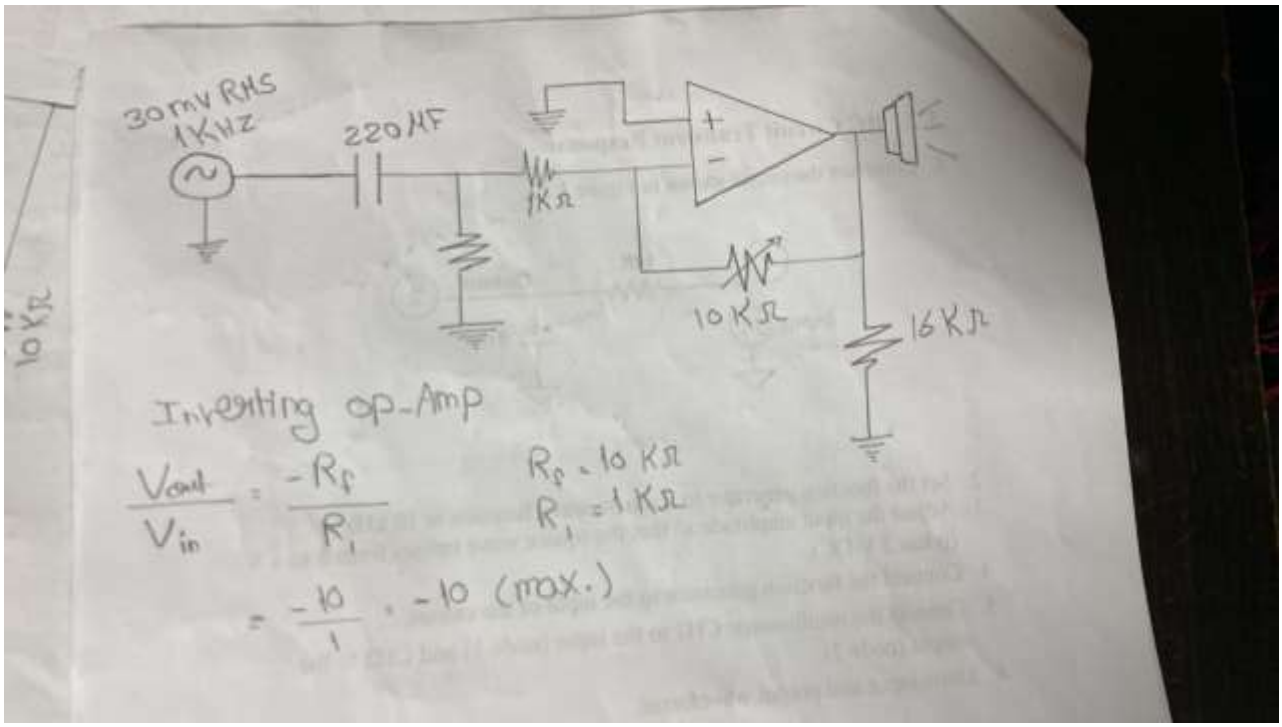
Simulation with proteus:



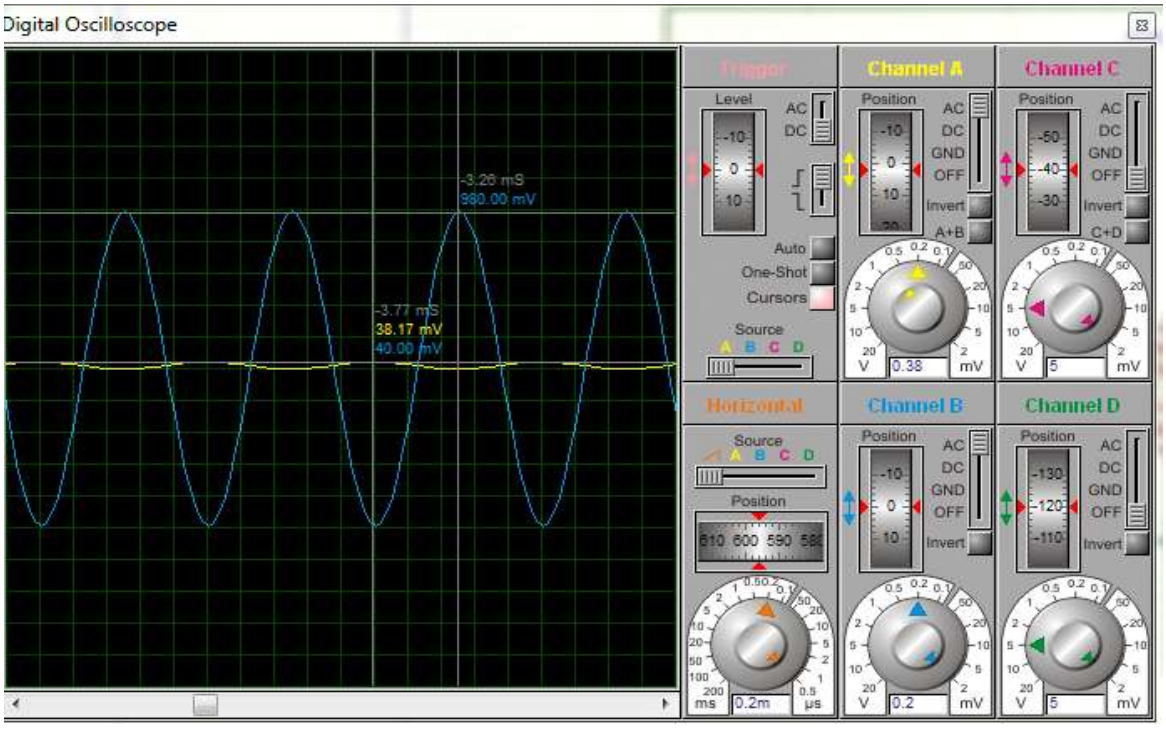
Components :

COMPONENT NAME	PRICE	Role of the component
Breadboard	45	Connect the components
Potentiometer 10K Ohm	35	To adjust the voltage we need
Battery + cap 9v	30	Voltage source with aconstant value
Speaker 8 Ohm	15	To output a wave
Capacitor	3	To construct the cuircuit
AUX cable	15	To input the wave
Total	143	

Detailed hand analysis:



Simulation results using Proteus:



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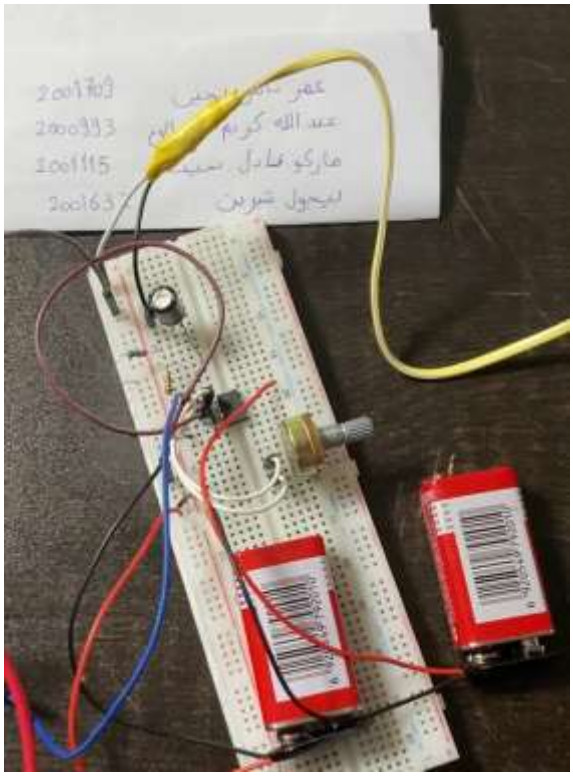

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References

[1] https://www.electronics-tutorials.ws/amplifier/class-ab-amplifier.html

[2] https://www.electronics-tutorials.ws/amplifier/amp_1.html

[3] https://www.master-micro.com/mastering-microelectronics/courses/introduction-to-electronics/course-resources

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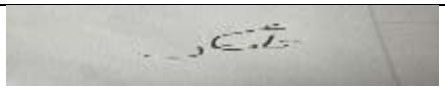
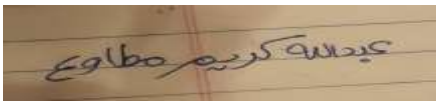
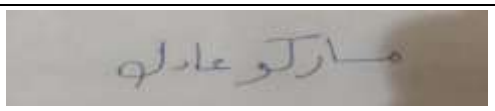
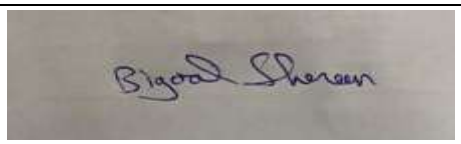
We certify that this report is our own work, based on our personal study and/or research and that we have acknowledged all material and sources used in its preparation, whether they are books, articles, reports, lecture notes, and any other kind of document, electronic or personal communication. We also certify that this assignment / report has not previously been submitted for assessment for another course. We certify that I have not copied in part or whole or otherwise plagiarized the work of other students and / or persons.	   

THANK YOU