Lab Report

Himanshu Kumar Gupta
AI21BTECH11012

Contents

***Abstract*—This manual provides precedure of making a charger.**

Aim of the experiment

In this experiment we made a charger of output 5V by using the circuit given in the report. we used different equipments and electrical devices to change the input of 220V AC to 5V DC.

Material required

1. Solderless Breadboard
2. Printed Circuit board
3. Transformer(12-0-12)
4. 4 IN4007 diode
5. capacitor(100μ F)
6. 7805 Regulator
7. Output point
8. AC cable with a plug.
9. Multi-meter
10. Cathode-ray oscilloscope
11. USB cable

Circuit explanation

The transformer steps down the 230V AC main supply to 12V AC. Note that these are RMS voltages. The peak voltage will thus be $12\sqrt{2} \approx 18V$. The transformed voltage is given by

$$v(t) = 12\sqrt{2}\sin(100\pi t + \phi)V \tag{0.1}$$

Procedure

After collecting all the material requied we started arranging the tansistor, capacitor and diode in a proper manner as shown in circuit. Firsty we connected transformer so as to convert 230V to 12V.Then after fitting remaining material in breadboard we measured the output using multimeter. Since we had got the correct output ie. 5V so we removed the electrical equipments from the breadboard and arranged in the POC in the same arrangement as it was in breadboard.After that we did soledring using solder iron and solder wire.Since the remaining wire was harmful and of no use so we removed them.

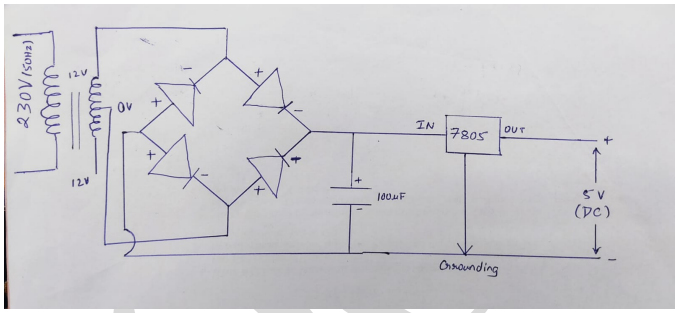

fig.1 Circuit diagram of charger

Observatrion

We have checked that the output we are getting is 5V so to verify it again we again checked it with cathode ray oscilloscope (CRO).Again we got the same reading as multimeter. after this we measured the voltage across half wave rectifire whose reult is ther in fig.2.

Result

Now after doing all the observations we have became ready to charge our Mobile phone. For that we attached a usb (Type C) cabel to the output point.On connecting the USB cable to the mobile phone and switching on the main supply to which the transformer is connected, we can see that the mobile phone is getting charged successfully.

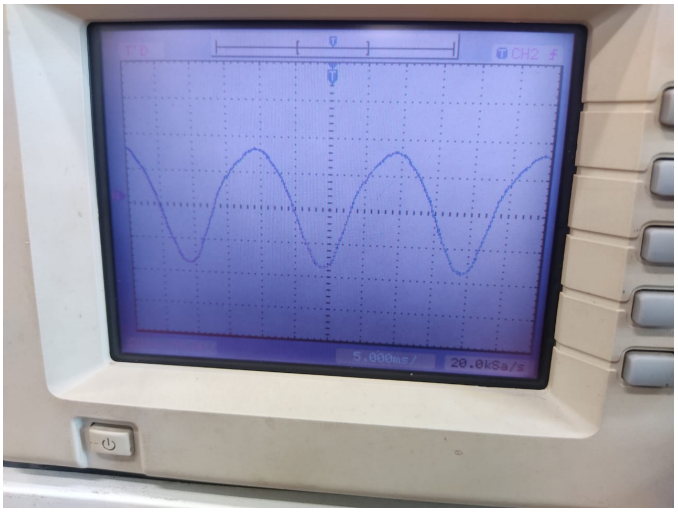

fig.2 CRO output of transformer

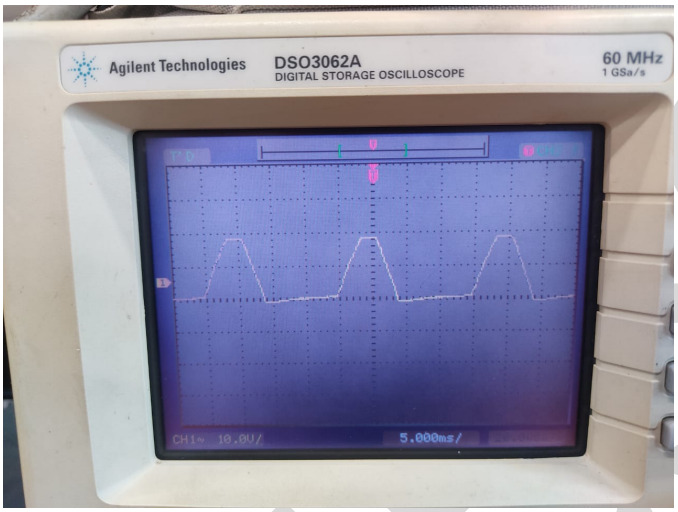

fig.3 CRO output of half wave rectified voltage across diode

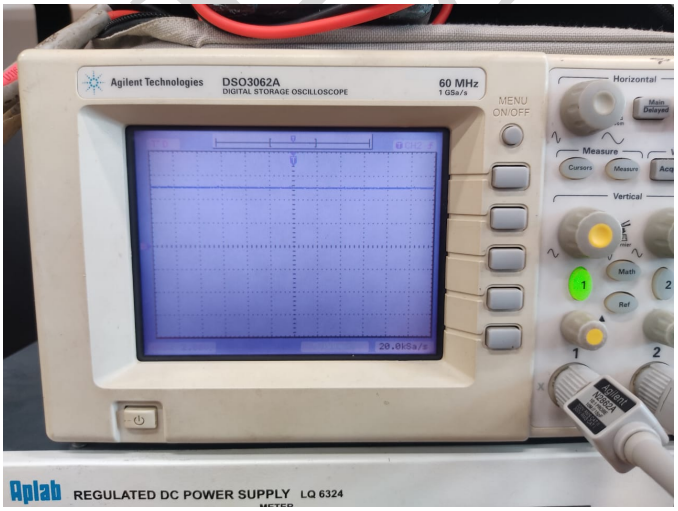

fig.4 CRO reding of main output of charger