K. J. Somaiya College of Engineering, Mumbai-77
(A Constituent College of Somaiya Vidyavihar University)
Department of Electronics Engineering

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Course Name:	EEEE	Semester:	I
Date of Performance:	29/11/22	Batch No:	C2-2
Faculty Name:	Jyoti Varavedkar	Roll No:	16010122109
Faculty Sign & Date:		Grade/Marks:	

Experiment No: 3
Title: Mobile Battery Charger

Aim and Objective of the Experiment:

- To understand the working of Mobile Battery Charging Circuit
- To implement the circuit of Mobile Battery charger on Breadboard and observe the waveforms at various points (Input and output Waveforms for Bridge Rectifier) and measure the output voltage

Requirements:

Step-down Transformer (+/= 12 v), Diodes(1N4007), voltage regulator IC 7805, Resistor, Capacitors((1000μF, 100μF, 10μF,0.01 μF), CRO, Digital Multimeter (DMM), breadboard, connecting wires, Micro USB cable, etc.

Theory:

A charging station sends electromagnetic energy through inductive coupling to an electrical device, which stores the energy in the batteries.A mobile battery charger circuit is a device that can automatically recharge a mobile phone's battery when the power in it gets low.Battery chargers come as simple, trickle, timer-based, intelligent, universal battery charger-analyzers, fast, pulse, inductive, USB based, solar chargers, and motion powered chargers. These battery chargers also vary depending on the applications like a mobile phone charger, battery charger for vehicles, electric vehicle batteries chargers and charge stations.
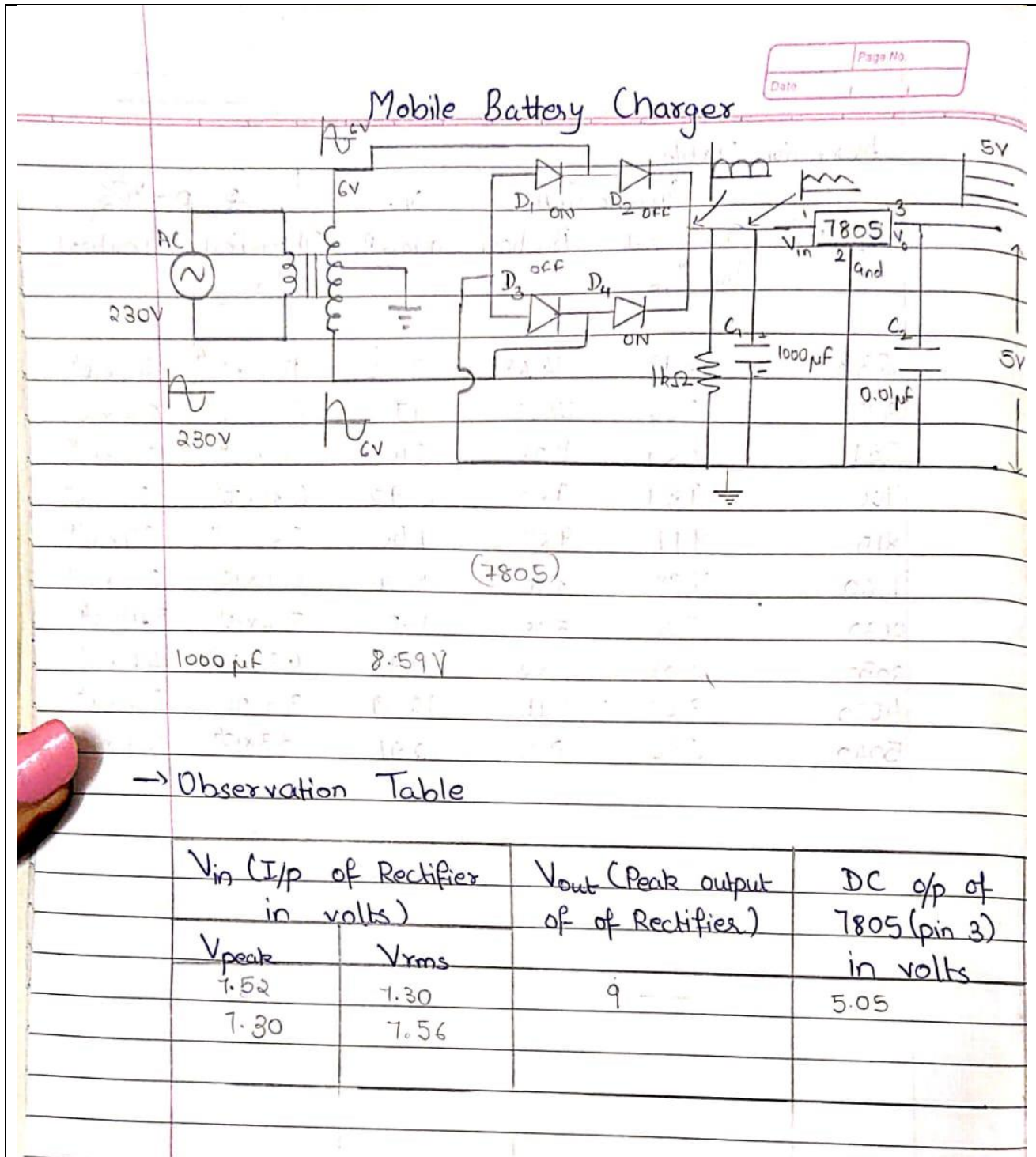
Circuit Diagram/ Block Diagram:
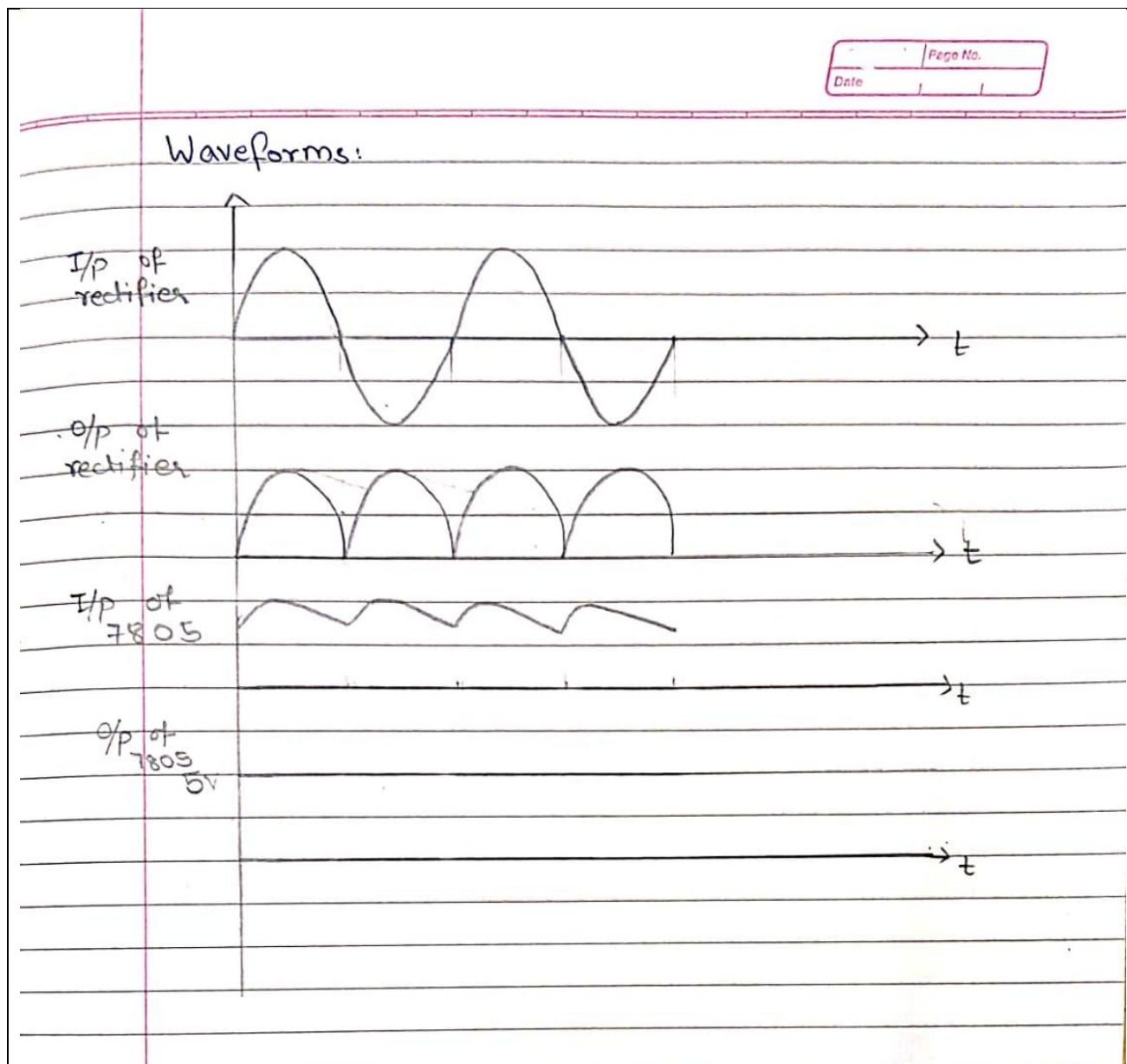

Circuit diagram of mobile battery charger
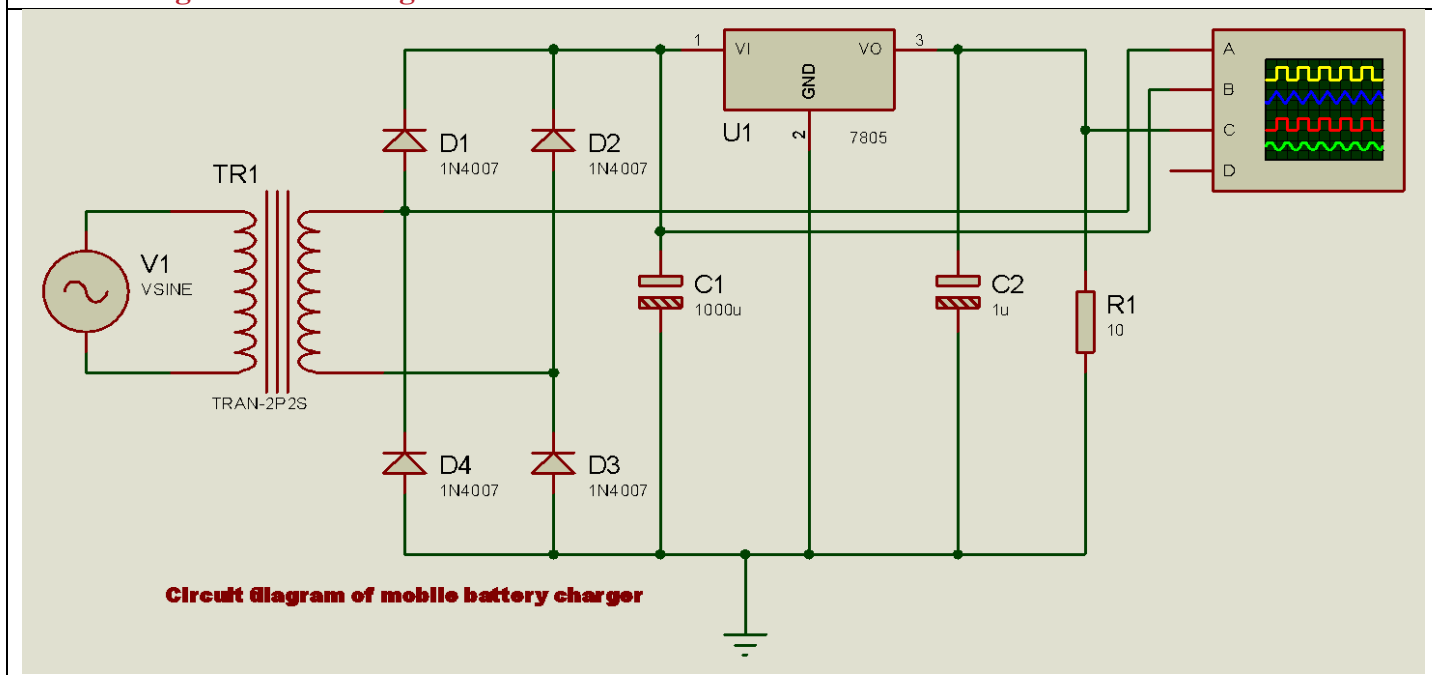
Stepwise-Procedure:

1. Design circuit and connect it as shown in the circuit diagram using Proteus simulator.
2. Run the hardware and take scree shot of it to attach in the output.

Output waveforms observed on CRO:

Mobile Battery Charger

(7805)

1000 μf   8.59 V

→ Observation Table

V_{in} (I/p of Rectifier in volts)		V_{out} (Peak output of of Rectifier)	DC o/p of 7805 (pin 3) in volts
V_{peak}	V_{rms}		
7.52	7.30	9	5.05
7.30	7.56		

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Waveforms:

I/p of rectifier

O/p of rectifier

I/p of 7805

O/p of 7805 5V

Observation Table:

Vin(peak) (input of Rectifier in Volts)	Vin(rms) (input of Rectifier in Volts)	Vout(peak) Output of Rectifier (in Volts)	DC output of 7805 (in Volts)
7.52	7.30	9	5.05
7.30	7.56		

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Post Lab Subjective/Objective type Questions:

1. Explain working of Mobile Battery charger circuit
2. Explain the working principle of Turbo- charger for mobile phones .
3. State commonly used types of mobile phone batteries.
4. Explain how to maximize Battery Performance/ Battery life of your mobile phone?
5. Write important specifications of Voltage regulator IC 7805

1]A mobile battery charger circuit is a device that can automatically recharge a mobile phone's battery when the power in it gets low Battery chargers come as simple, trickle, timer-based, intelligent, universal battery charger-analyzers, fast, pulse, inductive, USB based, solar chargers, and motion powered chargers. These battery chargers also vary depending on the applications like a mobile phone charger, battery charger for vehicles, electric vehicle batteries chargers and charge stations.As you start the current in the circuit, the current flows,it passes throught the capacitors and ic 7805.

2]The Turbo Charger is a universal n-watt charger. The built-in USB port allows you to connect any USB cable so you can easily charge smartphones, tablets, or other devices and get up to a greater amp charging rate.The phone charges faster in less amount of time.

3]Two types of batteries are used in modern mobile and smartphones - Lithium Polymer(Li-Poly) and Lithium-Ion. Li-Poly is the latest and the most advanced battery used in modern mobile and smartphones.

4]We can maximize battery performance or battery life of our mobile phone by keeping the brightness low,set brightness automatically,restrict apps with high battery use,turn on adaptive battery, turn on black theme.

5] Important specifications of IC 7805:
- 5V Positive Voltage Regulator.
- Minimum Input Voltage is 7V.
- Maximum Input Voltage is 25V.
- Current is 5mA.
- Internal Thermal Overload and Short circuit current limiting protection is available.
- Junction Temperature maximum 125 degree Celsius.

Conclusion:

Thus , we learnt how to operate the mobile battery charging circuit.

Signature of faculty in-charge with Date: