|  |  |  |  |
| --- | --- | --- | --- |
| **Course Name:** | **Elements of Electrical and Electronics Engineering** | **Semester:** | **I** |
| **Date of Performance:** |  | **Batch No:** | **C4-1** |
| **Faculty Name:** |  | **Roll No:** | **11** |
| **Faculty Sign & Date:** |  | **Grade/Marks:** | **/ 25** |

**Experiment No: 2**

**Title:** **Mobile Battery Charger**

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

|  |
| --- |
| **COs to be achieved:** |
| **CO1:** Analyze resistive networks excited by DC sources using various network theorems.  **CO2:** Demonstrate and analyze steady-state response of single-phase and three-phase circuits  **CO3:** Understand the principles and workings of AC and DC machines with their applications.  **CO4:** Explain rectifier-filter circuits using the PN junction diode and voltage regulator circuits  using the Zener diode |

|  |
| --- |
| **Requirements:** |
| Step-down Transformer (6V-0-6V), Diodes(1N4007), voltage regulator IC 7805, Resistor, Capacitors, CRO, Digital Multimeter (DMM), breadboard, connecting wires, Micro USB cable, etc. |

|  |
| --- |
| **Circuit Diagram:** |

|  |
| --- |
| **Stepwise-Procedure:** |
| 1. Design the circuit and connect it as shown in the circuit diagram 2. Observe the waveform on the CRO at different points in the circuits. |

|  |
| --- |
| **Output waveforms observed on CRO:** |
| **1. Plot secondary voltage across transformer versus time**    **2. Plot Rectifier output versus time**    **3. Plot Capacitor filter output versus time**    **4. Plot output of Voltage regulator versus time** |

|  |
| --- |
| **Observation Table:** |
| |  |  |  | | --- | --- | --- | | **Vin (p-p & rms)**  **(Input of Rectifier in Volts)** | **VOut(peak)**  **Output of Rectifier (in Volts)** | **DC output of 7805 (in Volts)** | | **230V** | **6V** | **5V** | |
| **Post Lab Subjective:** |
| 1. State commonly used types of mobile phone batteries  2. Explain how to maximize the Battery Performance/ Battery life of your mobile phone.  3. Write important specifications of Voltage regulator IC 7805  (You can attach the data sheet of IC 7805) |

|  |
| --- |
| **Conclusion:** |
| This experiment provided valuable insights into the functioning of a Mobile Battery Charger circuit. It demonstrated the importance of voltage regulation in ensuring a stable charging process. The practical experience gained from observing waveforms and measurements on the CRO and DMM enhances our understanding of power electronics and its applications in mobile technology. |

|  |
| --- |
| **Signature of faculty in-charge with Date:** |