**Title**

“**Battery Level Indicator Circuit”**

**Group Details:**

**1-2020-CS-125** **2**-**2019-CS-133**

**3-2020-CS-134** **4**-**2020-CS-157**

**Motivation:**

Technology on batteries has advanced over the years as a result of the need to power portable devices that have risen in numbers in the last decade. Just like primary cells, rechargeable batteries work in the same way, only their chemical reactions are reversible. This project aimed at building a system that would indicate the capacity level of a Nickel Metal Hydride battery upon charging and discharging. The project uses a LM3914 driver IC use to drive 10 leds by passing through it sufficient amount of current. Brightness of leds are controlled by reference adjustable pin and reference out pin. A better way to handle batteries to conserve capacity has also been highlighted.

**Overview:**

**i-Significance:**

A battery level indicator is with electronic appliances to arrange as to display, on an indicator, a real time voltage detected by voltage indicator. Indicator indicates how much power the battery will be able to supply to electronic apparatus. It is used to check the battery level with the help of LED’s for example if three LED’s, indicates battery capacity of 30 percent. And if 10 LED’s glow then it is 100 percent. Easily indicate the battery level. Enhanced version of this circuitry is the present mobile phone battery level indication system. This circuit can be used in household applications like INVERTER. This circuit connected to inverter can help the users to know when to charge and when to leave the inverter idle. Minimized version of this circuit can be also used for automobiles to indicate the battery level and low cost.

**ii-Description:**

Battery level indicator is a circuit that is used to check the battery life. We can easily recognize the battery level with the help of LED’s. It uses a LM3914 driver IC use to drive 10 leds by passing through it sufficient amount of current. Brightness of leds are controlled by reference adjustable pin and reference out pin. A variable resistor is also deployed in the circuit to have variable input voltage at pin 5 of the driver IC. Since the driver IC has two modes of operation which is bar graph mode and dot mode, it enables us to have indication of the battery life either in bar form or in dot form. We can have coloured leds to indicate state of the batteries like first three leds will indicate low battery. Green leds will indicate full battery. Thus by using various coloured leds representation of battery life will be made easy to understand.

**iii-Background:**

Knowing the amount of energy left in a battery compared with the energy it had when it was full gives the user an indication of how much longer a battery continue to perform before it needs recharging. This would be easy if the battery could be discharged at a constant rate. The charge in a battery is equal to the current multiplied by the time for which it flowed. In all practical batteries, the discharge current is not constant but diminishes as the battery becomes discharged, usually in a non-linear way. Any measurement device must therefore be able to integrate current over time. Secondly, this method depends on discharging the battery to know how much charge it contained.

**Problem Statement:**

Battery level indicator is the project that indicates status of battery by use of LED. This project can know the status of battery left. This is can give easier to people and can be more alert then about status of battery level. Battery level indicator can present a circuit that can know the battery level of a device from the number of LED glowing.