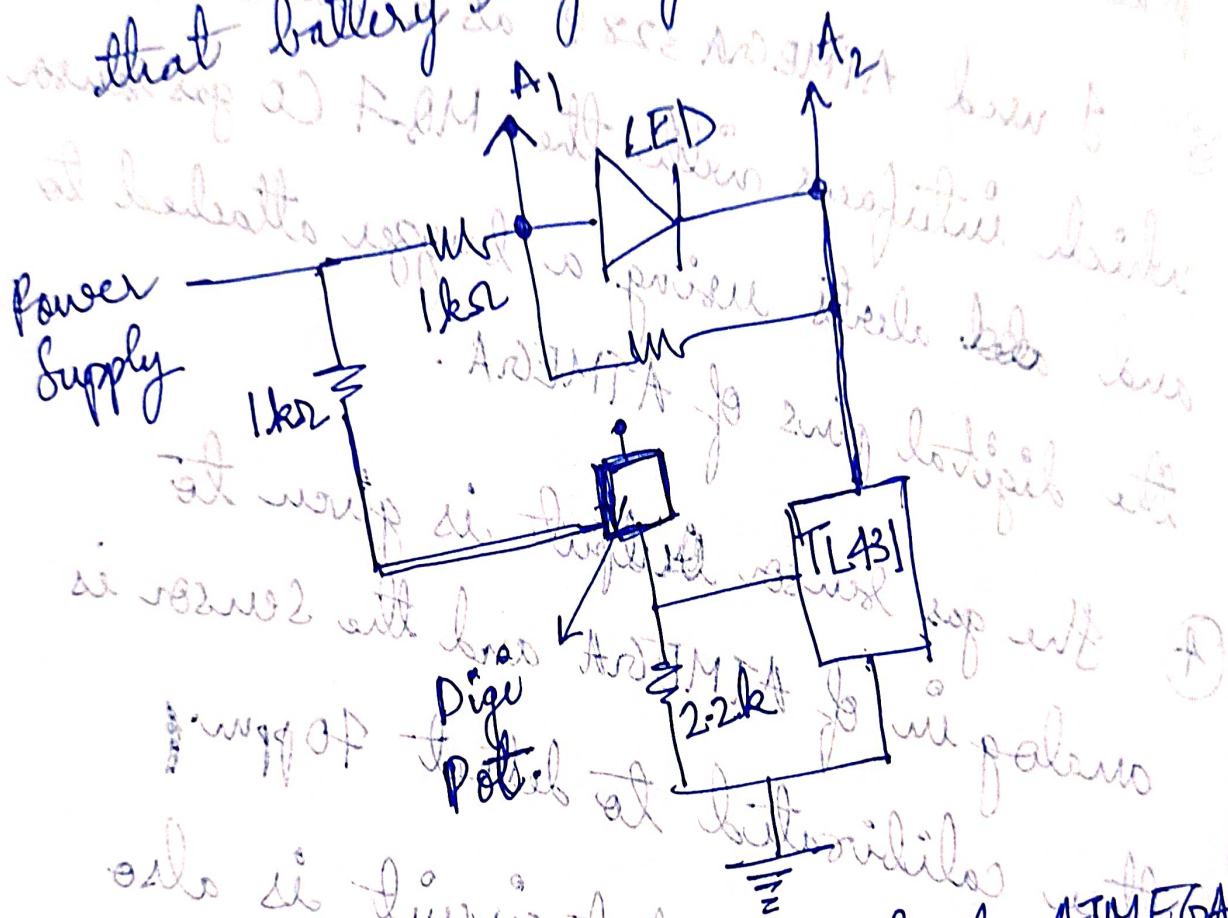


NOTE :- I started the test again after submitting at 5:00 PM, so I need to upload all the answers again. But in the ~~re~~ attempt test I got another sensor — My earlier original sensor question was CO gas sensor. So all the answers are related to the gas sensor only. ~~\*\*\*~~ Everything is done after taking Abhyuth permission Only ~~\*\*\*~~

Q2

- ① The device should be small and light weight to fit easily on roofs.
- ② The device should be battery power rather than corded so that it becomes portable to place it anywhere.
- ③ I used ATMEGA 328P as a microcontroller which interfaces with the MQ-7 CO gas sensor and ~~and~~ alerts using a buzzer attached to the digital pins of ATMEGA.
- ④ The gas sensor output is given to analog in of ATMEGA and the sensor is then calibrated to detect 70ppm.
- ⑤ A low battery alert circuit is also designed using TL431 Precision Shunt regulator which detects ~~with~~ 0.02V change in 5V supply from the (7805) regulator.

This change can be detected by sending  
 this signals to Analog in inputs and  
 for a desired change we can program  
 the ATMEGA to alert the buzzer with  
 different frequency so that we know  
 that battery is going to die.



The  $A_1$  &  $A_2$  are Analog inputs for ATMEGA

The difference of this  $A_1$  &  $A_2$  voltage can  
 be seen. For a specified difference  
 the buzzer gets on.