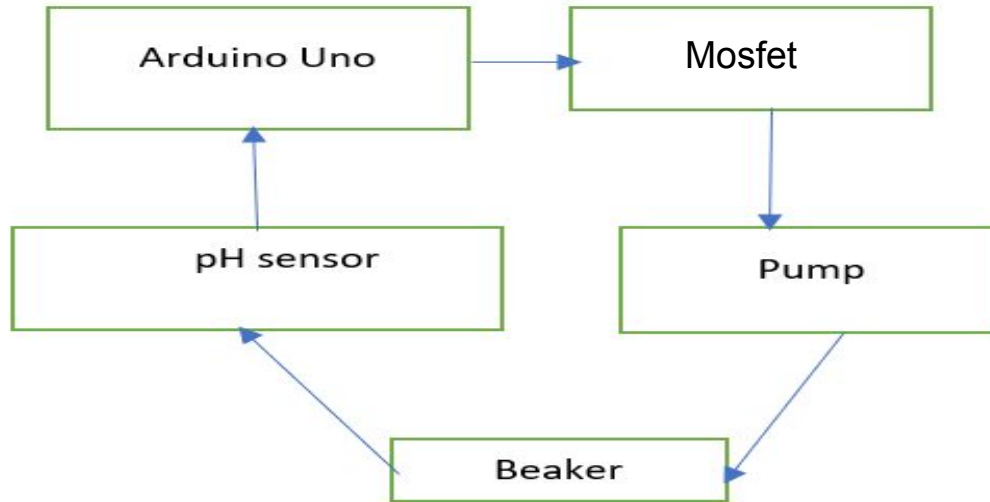# Automatic pH Regulator

TOPIC: Automatic Chemical Dilution System for Preset pH value

OBJECTIVES:

❏ To calibrate pH sensor with a buffer solution, measure pH using pH4502C.
❏ To implement a control system for diluting the solution to desired pH value.

BLOCK DIAGRAM:

WORKING OF SENSOR:

pH sensor : model - DFROBOT SEN0161

Working

- A pH sensor measures the concentration of hydrogen ions (H+) in a solution, which determines the acidity or basicity of the solution.
- The pH sensor typically consists of a glass electrode, a reference electrode, and a measuring circuit. The glass electrode generates a voltage that is proportional to the H+ ion concentration, and the reference electrode provides a stable voltage for comparison.
- The measuring circuit amplifies the voltage difference between the pH electrode and reference electrode and converts it into a pH value.

WORKING PRINCIPLE OF PROPOSED SYSTEM:
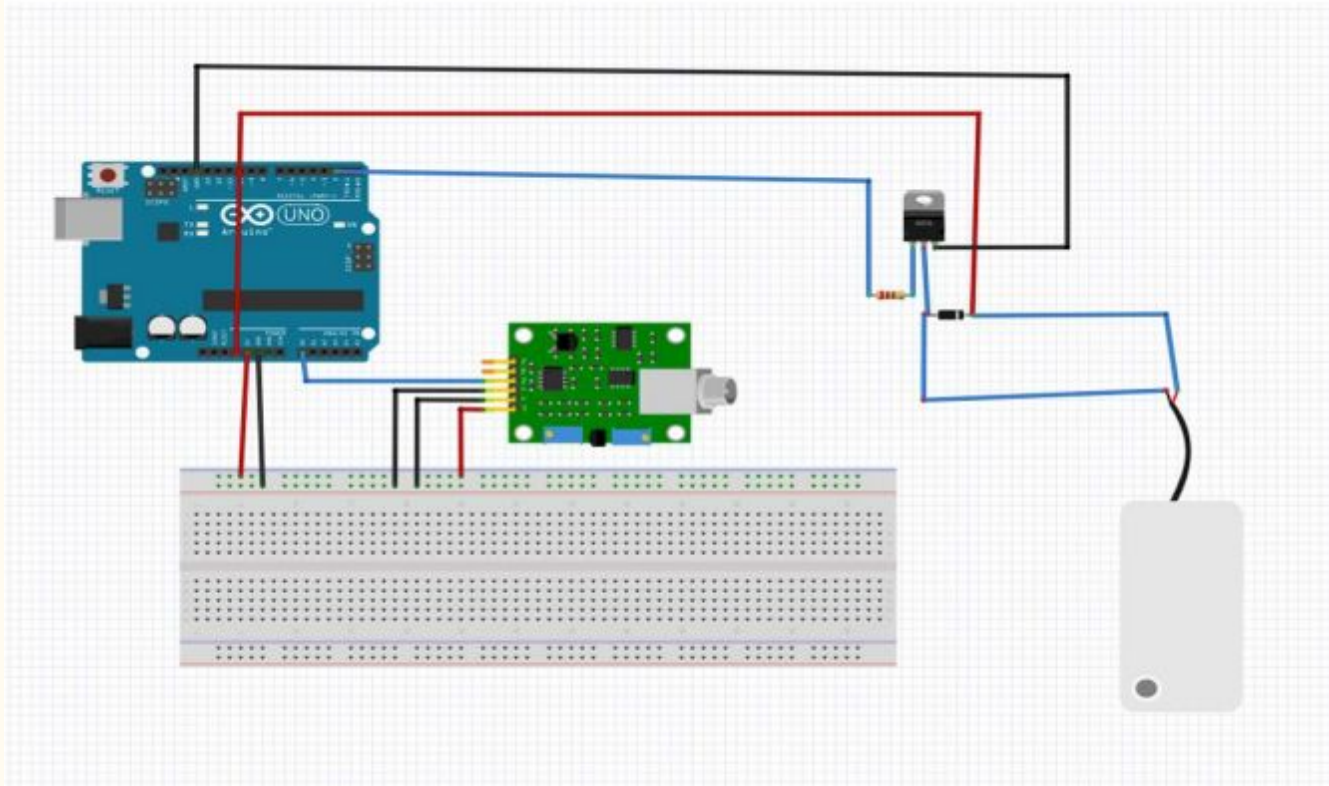
WORKING OF THE CIRCUIT:
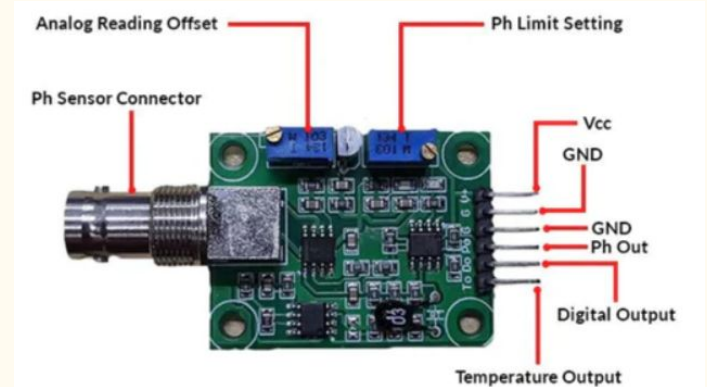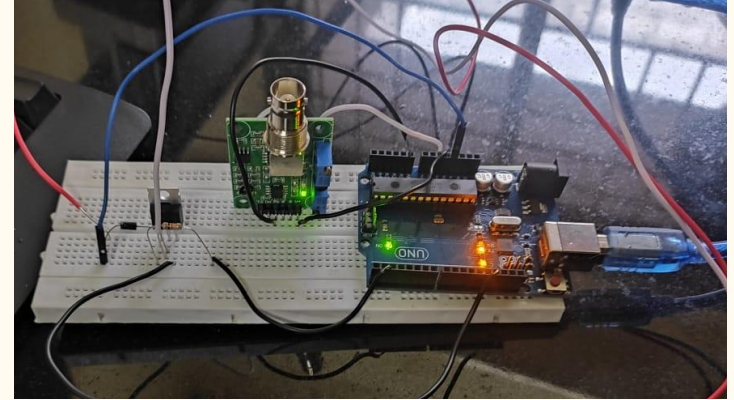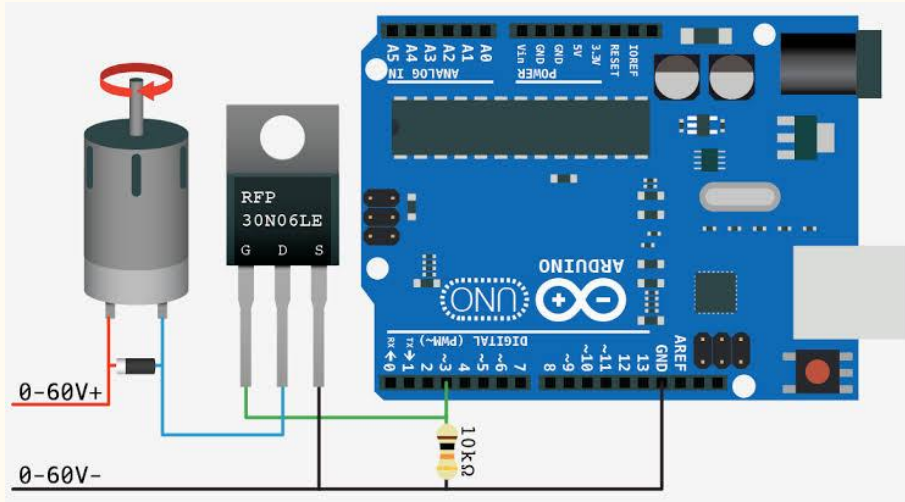
OBSERVATION:

SL No.	Initial pH	Desired pH	Final pH	Absolute Error	% Error
1	2.4	3	3.06	0.06	2
2	2.88	4.4	4.23	0.17	3.86
3	2.69	3.8	3.61	0.19	5

❏ At very high and low pH levels, the rate of pH change during dilution is slow.
❏ The model requires a tolerance range of at least 0.2 for proper function.

INFERENCES:

❏ The efficiency of the dilution process decreases at the extreme high and low pH levels.
❏ A tolerance range of 0.2 pH units is required due to inherent variability and limitations in the system.

DEMONSTRATION VIDEO:

LINK:

https://drive.google.com/drive/folders/1WI3yBkPjKkf2Mgi74FlHnDamxeo8k3gI?usp=sharing

FINAL MODEL: