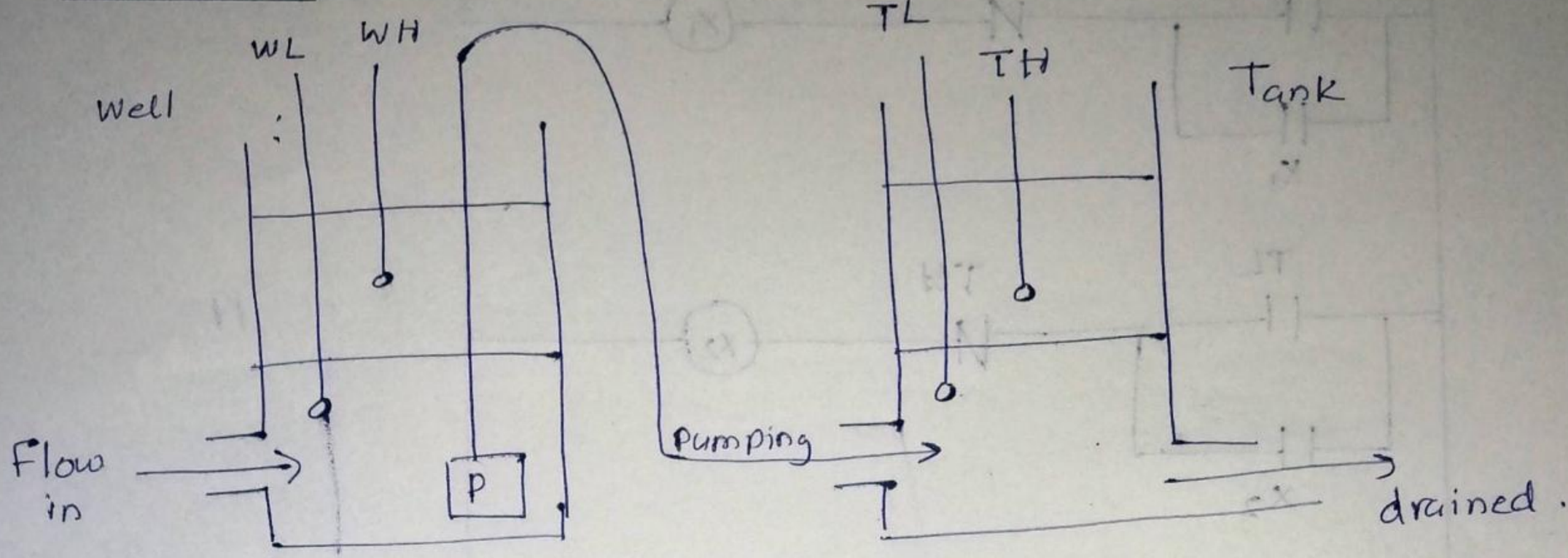
CO326 – Pump Automation

E/15/202



WL = Low water level of well

WH = High water level of well

TL = Low water level of tank

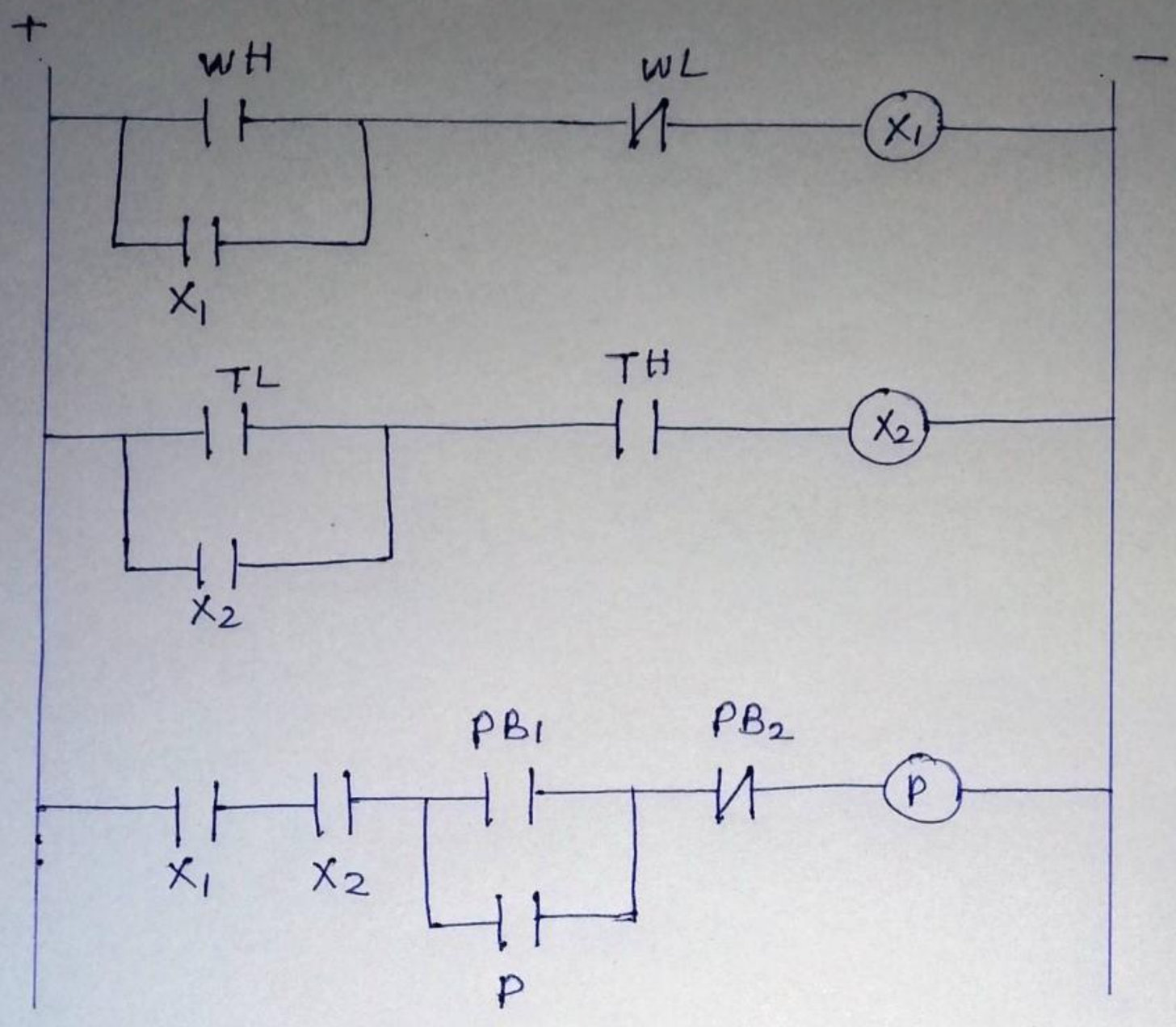
TH = High water level of tank

P = Pump.

Assumptions

* Well is provided with a flow of water (either manually or naturally)
* When well reach the required amount of water level well would be ready to pump. (WH)
* When the water level of tank reach ~~below~~ the TL, well will pump the water to the tank automatically.
* Tank will be drained for usage and when tank is filling with water (Pump is on) the valve which controls the drain will be closed. And when the pump is off that valve will be open.
* Assumed that water is pumped as given in the above diagram.
* When well reach WL, well is not ready to pump (Pump off). The pump will be ready to pump again, when only the well water level reach the WH.

Using Sensors

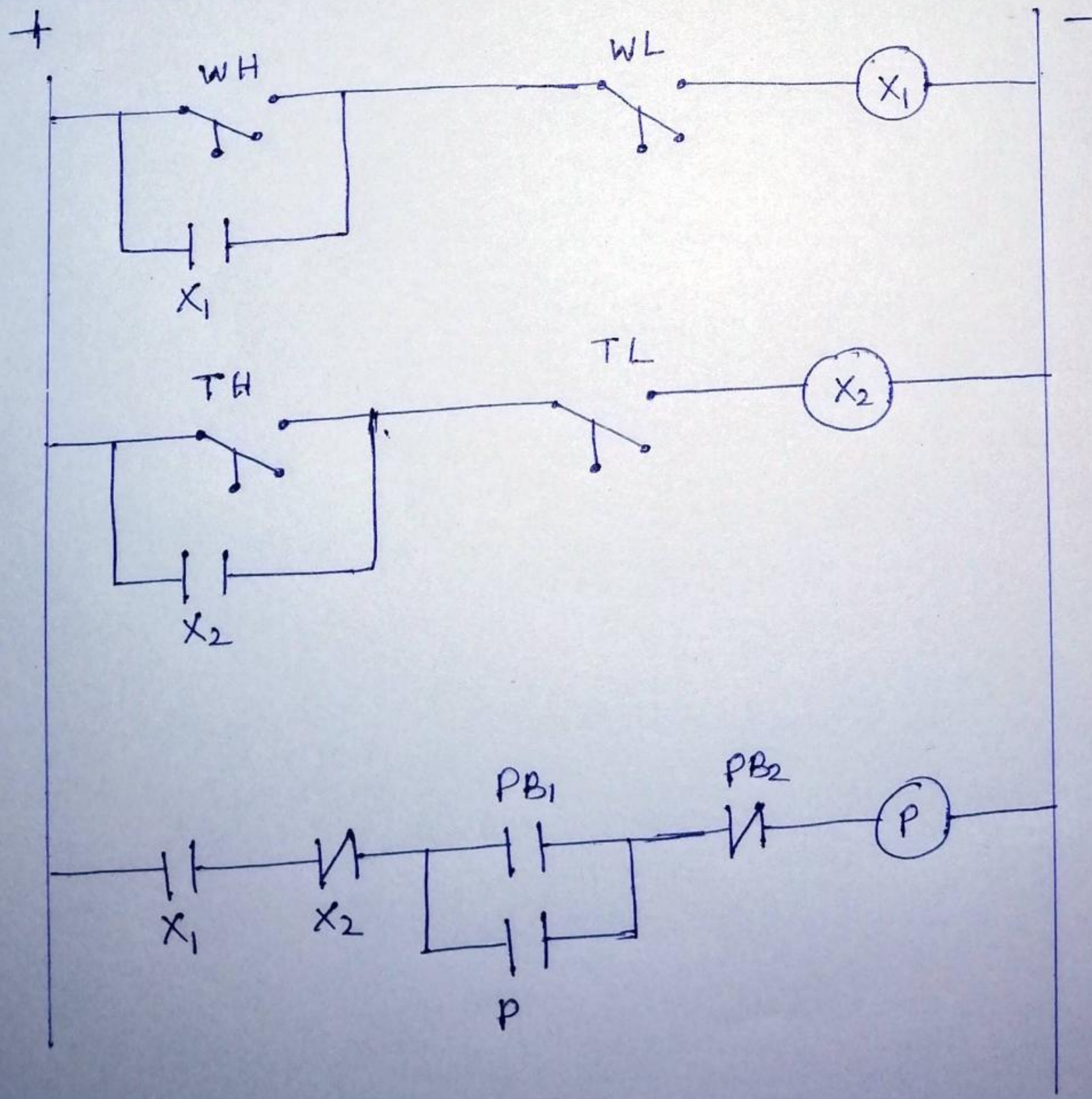


P = Pump motor

WH, WL, TH, TL given above

PB_1, PB_2 = Push buttons.

Using Floaters



* When the user press PB_1, if all the well and tank conditions are completed the pump will start to pump.
If the user want to stop the pumping at an immediate state they only have to press PB_2.

Any implementations to make the system fail-safe

* Although the start pump signal is generated automatically, still the pump will start only if the user press PB_1.
But there is no way that the user would know it.
So we can introduce a bulb to indicate that start pump signal is ready.

* Start pump signal is generated with the X_1 and X_2 signals.
If both conditions are satisfied at the same time, it may lead to an unpredictable behaviour.

To solve that we can: add time delays to X_1 and X_2.