**Project Report- Chemical Alarm System**

**Digital Logic Design (EE-227)**

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**Project Overview**

A chemical alarm system controller has been designed for a chemical factory. The factory creates chemicals that need optimum pH, temperature and pressure conditions. The alarm system will trigger an alarm if either of the quantities fall below a preset value or exceed the preset value.

**Project Objectives**

* To design the digital logic for a chemical alarm system
* Implement the chemical alarm system
* To demonstrate the working of a chemical alarm system
* Incorporate Sequential and Combinational circuits together successfully

**Circuit Design**

The chemical alarm is a monitoring system, which will work on three inputs, namely pH, temperature and pressure. The current input readings are compared with the preset value. If a quantity falls below the preset value or goes above the preset value, the circuit triggers a specific alarm. The operator can then increment the number of discrepancies during a shift and take the necessary actions to adjust the physical conditions. A sequential counter has been incorporated to keep track of the number of discrepancies in a single shift.

The circuit has been designed for the following preset values:

**Temperature:** 25<T<30

**Pressure:** 54<T<61 (All values in ATM)

**pH:** 11

The alarm system is designed using a combinational circuit. Comparator circuits are incorporated to compare the current values with preset values. An LED bulb goes on when an input value is not equal to the pre-set value. The counter will keep track of the number of times any alarm goes off.

A screenshot of a social media post

Description automatically generated