

Set for Team 122

Construct the necessary truth table(s), Boolean functions and Simulation file with the appropriate IC diagram comprising the basic logic gates that represent the following scenario:

Suppose you are working as a hardware engineer in a rocket manufacturing company and you have been given the task to design a safety alarm system for the rocket's combustion chambers. What you need to observe whether **the fuel supply inside all of the chambers gets decreased OR the temperature inside any of the chambers** gets too high beyond a threshold value. There are two such combustion chambers inside the rocket, and each of the chambers are monitored with a fuel observing sensor and a temperature sensor. So, actually there are four separate sensors that have been planned to be installed for the total combustion unit. When one or both of the aforementioned incident occurs the emergency alarm siren must be turned on automatically. **If the occurrence of these incidents is considered as a Boolean value whether happening or not**, how are you supposed to build the logic? Build a truth table that reflects above scenario accordingly and derive a Boolean function that can be used to implement your hardware design. Then simulate the function with IC diagram comprising of basic logic gates.