

2.10 Convert the following English problem statements to Boolean equations:

- a. A flood detector should turn on a pump if water is detected and the system is set to enabled
- b. A house energy monitor should sound an alarm if it is night and light is detected inside a room but motion is not detected.
- c. An irrigation system should open the sprinkler's water valve if the system is enabled and neither rain nor freezing temperatures are detected.

a) $\text{Pump} = \text{WaterDetected} \text{ AND } \text{SystemEnabled}$

b) $\text{Alarm} = \text{Night} \text{ AND } \text{LightInsideDetected} \text{ AND } \text{NOT } \text{MotionDetected}$

c) $\text{WaterValveOpen} = \text{SystemEnabled} \text{ AND } \text{NOT } (\text{RainDetected} \text{ OR } \text{FreezingTemperaturesDetected})$