a. Fire/Smoke Detector – sound an alarm when the detector senses fire or smoke. Use a temperature sensor to detect heat and a light and light sensor to detect smoke.

Fire Sensor (F) = No Fire = 0, Fire = 1

Smoke Sensor (S) = Smoke = 0, No Smoke = 1

Alarm (A) = Alarm Off = 0, Alarm On = 1

F	S	A
0	0	1
0	1	0
1	0	1
1	1	1

$A = \bar{F}\bar{S} + F\bar{S} + FS$