5 A security system has both a floodlight (very bright light) and an audio alarm.

The data from multiple sensors is analysed and used to:

- turn on the floodlight
- sound the audio alarm.

Sensors can be used to detect:

- if doors are open
- the external daylight level
- if people are detected within a set distance.

(a) Complete the table to identify the most appropriate type of sensor for each scenario.

Scenario	Type of sensor
A door is open.	
The external daylight level is below a set amount.	
A person is detected within 2 metres.	

[1]

(b) The floodlight (**X**) and audio alarm (**Y**) operate according to the following criteria:

Parameter	Description of parameter	Binary value	Condition
A	external daylight level	1	Low
		0	High
B	front door	1	Open
		0	Closed
C	person is within 2 m	1	Detected
		0	Not detected
D	back door	1	Open
		0	Closed
E	security system	1	Switched on
		0	Switched off

The floodlight turns on (**X = 1**) if:

- the security system is switched on
  and
- the external daylight level is low
  and
- a person is detected within 2 m.

The audio alarm turns on (**Y = 1**) if:

- the security system is switched on
  and
- one **or** more doors are open, **or** a person is detected within 2 m.

Write logic expressions for the security system.

X = ...

.....

Y = ...

.....

[2]

(c) Explain whether the security system is an example of a monitoring system or a control system.

.....

.....

.....

.....

.....

..... [3]