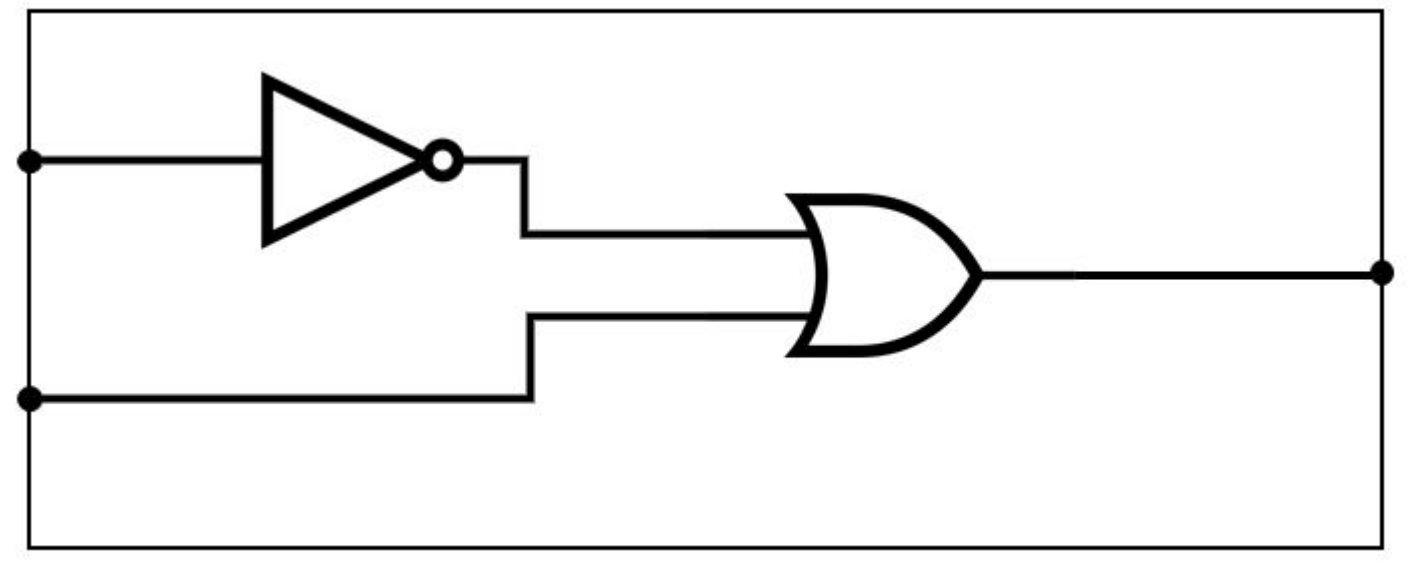
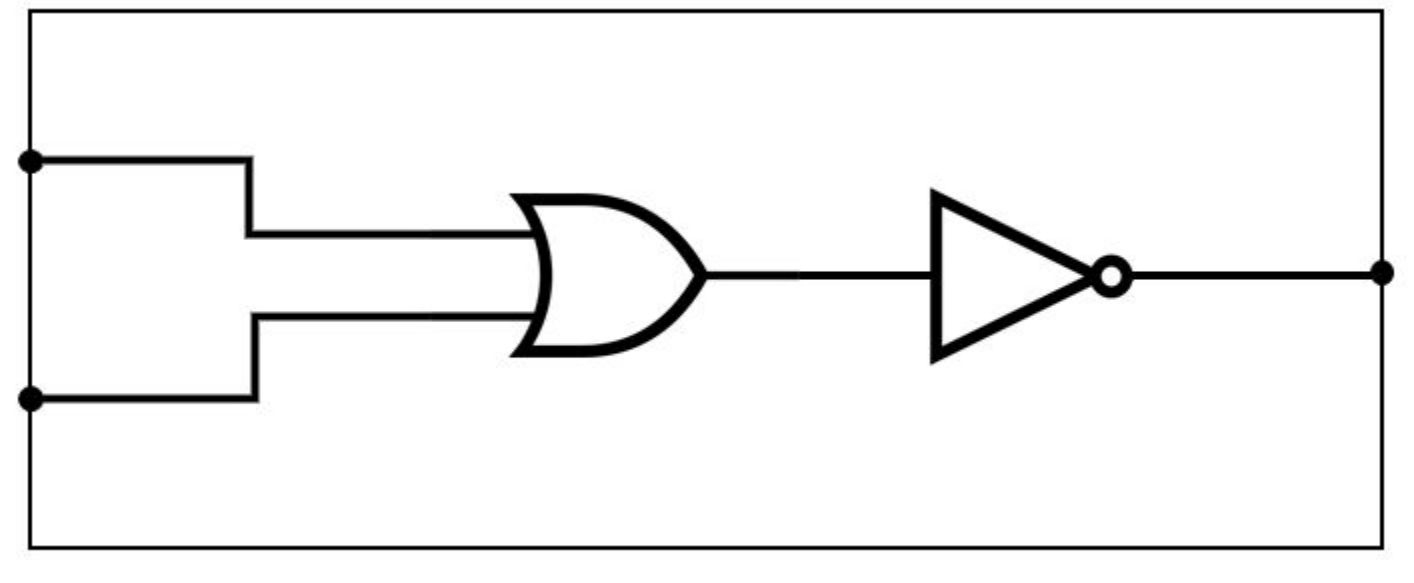
Boolean Logic Diagrams

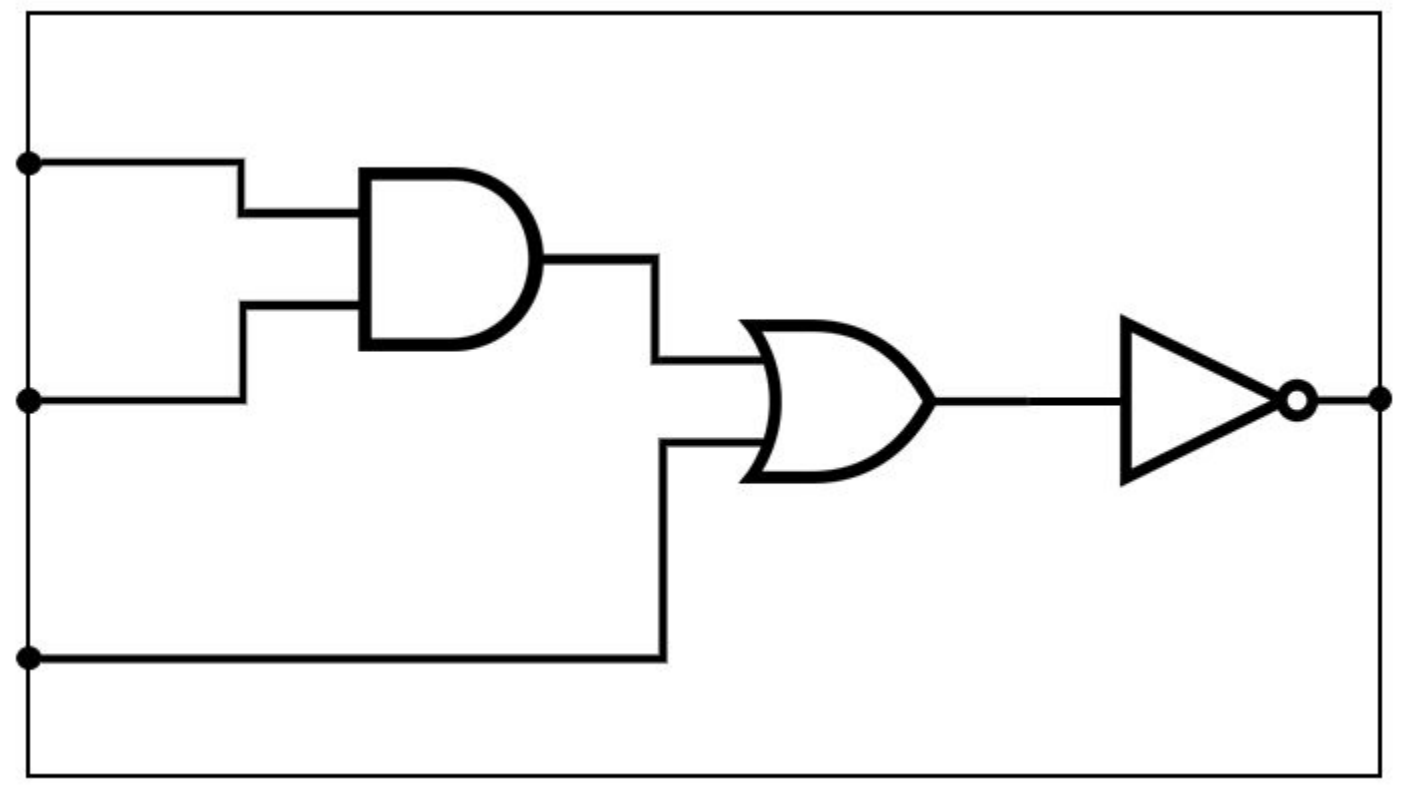
You need to be able to interpret and draw logic diagrams using the four logic gates



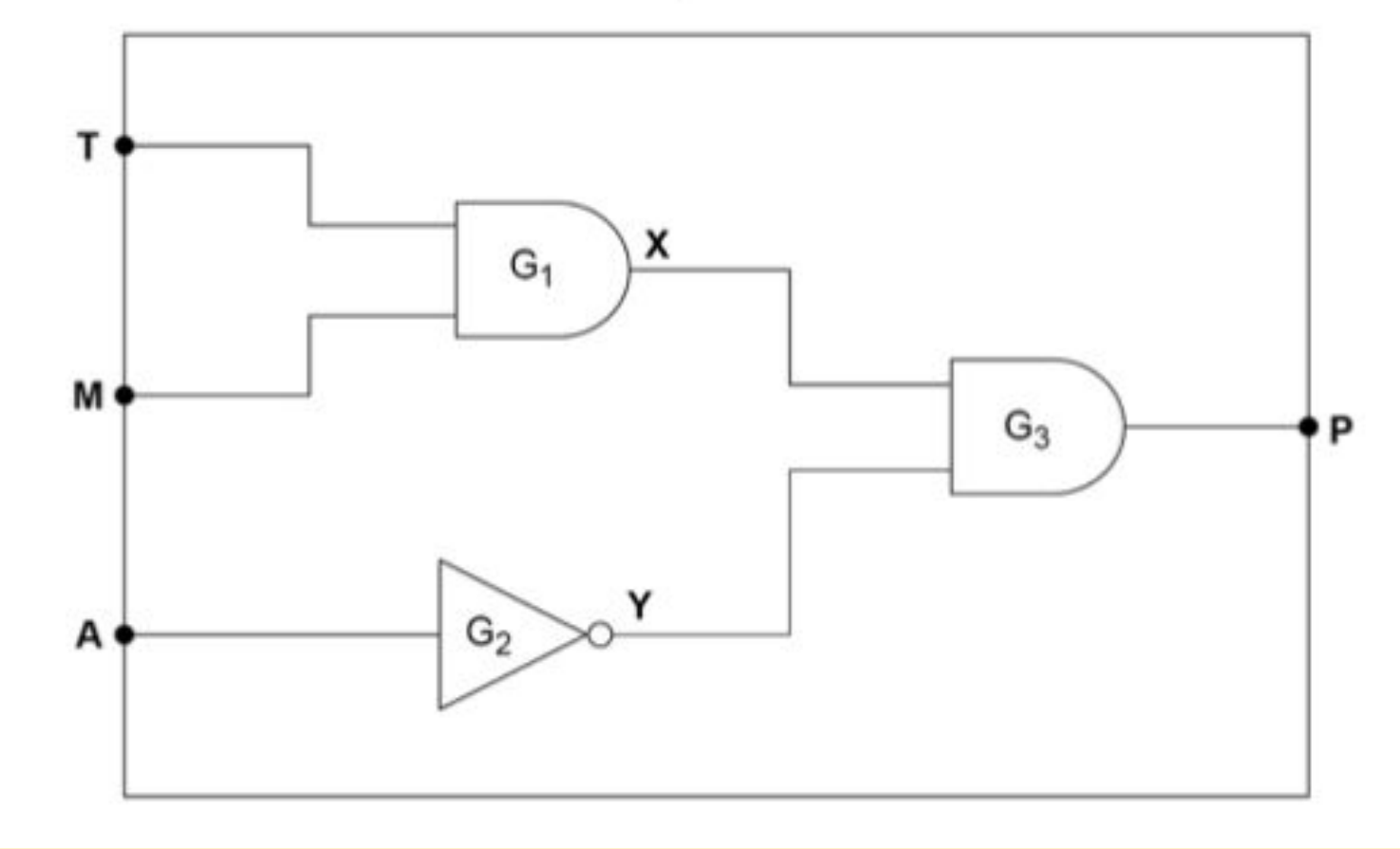
Boolean Logic Diagrams



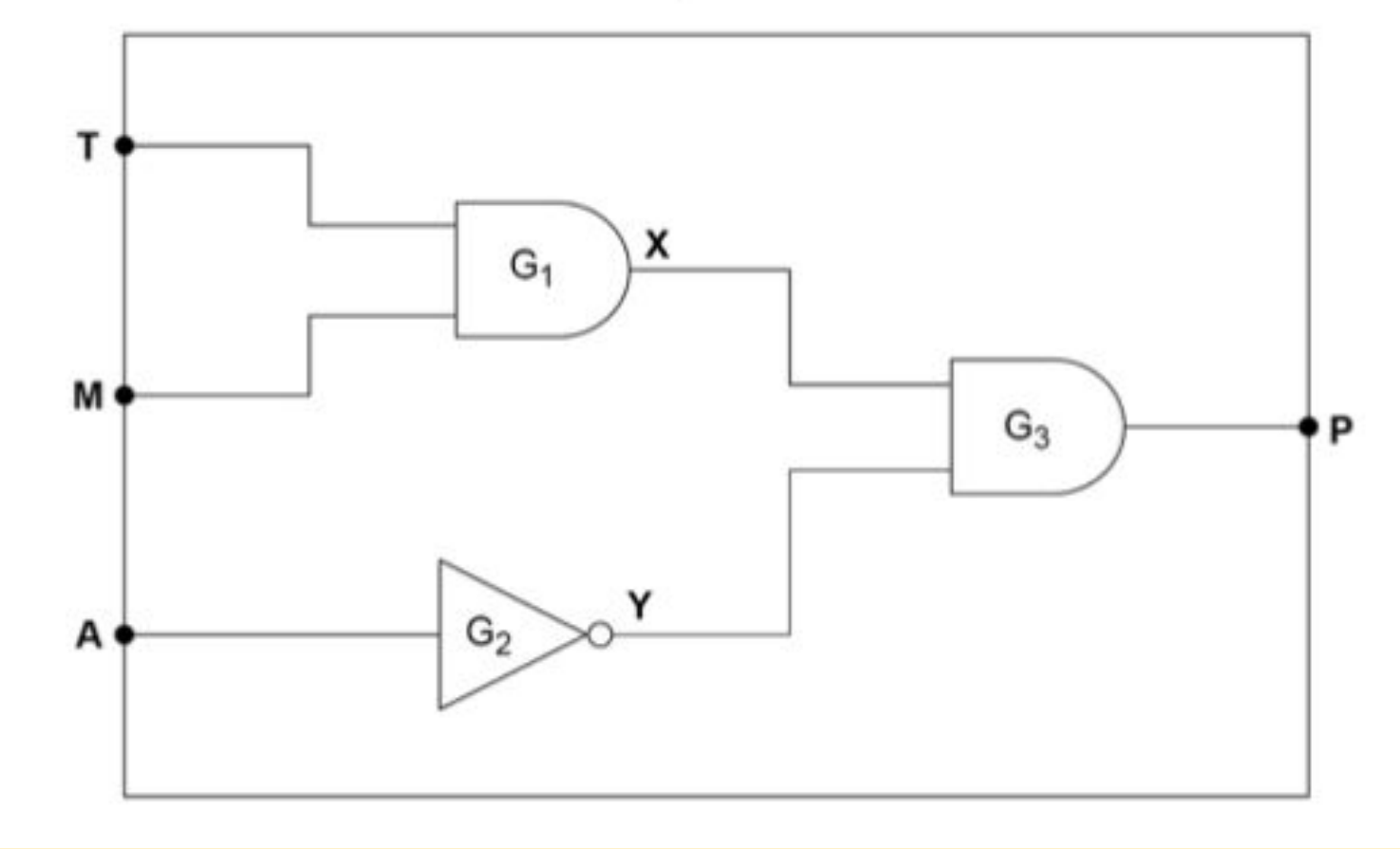
Boolean Logic Diagrams



Boolean Logic Diagrams

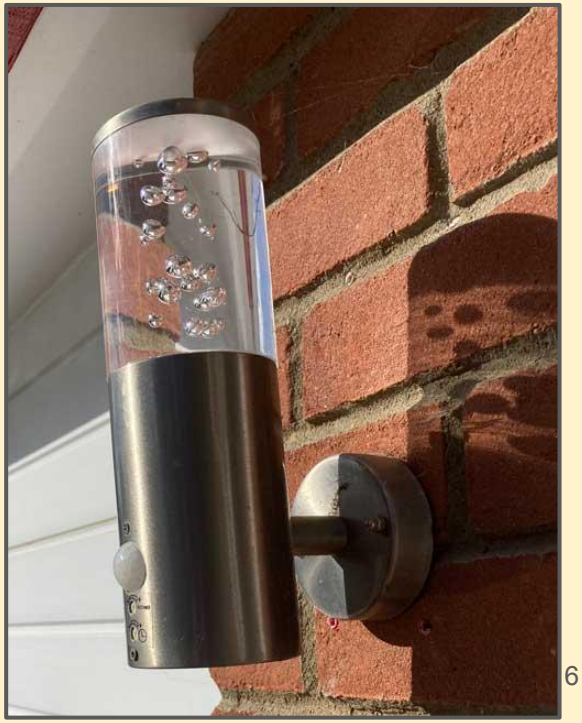


Boolean Logic Diagrams



Boolean Logic Diagrams

My neighbour Steve has this light outside his house. It has a light sensor and a movement sensor. The light turns on if it is dark and something moves.



How many inputs?

How many gates?

A: light sensor
B: movement sensor
Q: output

Boolean Logic Diagrams

There’s also a light switch inside Steve’s house. This has to be turned on for the light to activate.

How many inputs?

How many gates?

A: light sensor
B: movement sensor
C: switch
Q: output

Boolean Logic Diagrams

A logic circuit is being developed for a bird scaring device in a garden.

The system has two sensors, **A** and **B**, that detect movement. The bird scarer should operate if either of these sensors is activated

The system has a switch, **C**, which can be turned on or off when required. The bird scarer should only operate if this switch is turned on

The output from the circuit is **Q**

Complete the logic circuit for this system.

A: movement sensor
B: movement sensor
C: switch
Q: output

0 8 . 2 A logic circuit is being developed for an audio advert in a shop that plays automatically if a customer is detected nearby.

- The system has two sensors, A_1 and A_2, that detect if a customer is near. The audio plays if either of these sensors is activated.
- The system should only play if another audio system, S, is not playing.
- The output from the circuit, for whether the advert should play or not, is Q.

Complete the logic circuit for this system.

[3 marks]