1.9 Electrical Systems: 10-minute Pack

AQA 8552 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions.

1 A battery-powered cupboard light uses a light-dependent resistor (LDR), a control circuit and an LED. Identify the input, process and output in this system.

(Total for Question 1 is 3 marks)

2 A fictional buzzer is rated 5 V and 0.12 A. Calculate its power using P = V x I.

(Total for Question 2 is 2 marks)

3 A fictional control board requires 5 V and draws 0.30 A. A regulator is rated to provide 5 V at up to 0.40 A. Decide whether it meets both requirements and explain.

(Total for Question 3 is 2 marks)

4 A fictional proximity sensor has a reliable operating range of 5 cm to 80 cm. A product must detect a hand at 12 cm. State whether the sensor meets the requirement and justify your answer.

(Total for Question 4 is 2 marks)

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Mark scheme · 1.9 Electrical Systems: 10-minute Pack

Question 1

input: LDR sensing light level	**B1**
process: control circuit compares or uses the sensor signal	**B1**
output: LED producing light	**B1**

Answer: Input: LDR light sensor. Process: control circuit. Output: LED light.

Question 2

substitution P = 5 x 0.12	**M1**
0.60 W	**A1**

Answer: 0.60 W

Question 3

yes: output voltage matches 5 V requirement	**B1**
0.30 A required is less than 0.40 A capacity	**B1**

Answer: Yes. It supplies the required 5 V and its 0.40 A capacity exceeds the 0.30 A draw.

Question 4

yes, 12 cm is within the stated 5 cm to 80 cm range	**B1**
the sensor is specified to operate reliably at that distance	**B1**

Answer: Yes. 12 cm is inside its stated reliable range.

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