Electricity

GCSE Science • **Combined and Triple** • Grades 3–6

Name: _____ Class: _____ Total: _____ / 54

Show all your working. Marks are given for correct method as well as the final answer.

1. Define electric current. **[2 marks]**

Answer: _____

2. Write down the equation linking charge, current and time. **[1 mark]**

Answer: _____

3. A current of 3 A flows for 40 s. Work out the charge that passes. **[2 marks]**

Answer: _____ **C**

4. Write down the equation linking potential difference, current and resistance. **[1 mark]**

Answer: _____

5. A 12 V supply drives 4 A through a resistor. Work out its resistance. **[2 marks]**

Answer: _____ Ω

6. A 6 Ω resistor carries 2 A. Work out the potential difference across it. **[2 marks]**

Answer: _____ **V**

7. Name the instrument used to measure current and say how it is connected. **[2 marks]**

Answer: _____

8. Name the instrument used to measure potential difference and say how it is connected. **[2 marks]**

Answer: _____

9. State what happens to the current at different points in a series circuit. **[2 marks]**

Answer: _____

10. State how the potential difference is shared in a series circuit. **[2 marks]**

Answer: _____

11. Two resistors of 4 Ω and 6 Ω are in series. Work out the total resistance. **[2 marks]**

Answer: _____ Ω

12. Those resistors are connected to a 20 V supply. Work out the current. **[3 marks]**

Answer: _____ **A**

13. State what happens to the potential difference across each branch of a parallel circuit. **[2 marks]**

Answer: _____

14. Explain why adding a resistor in parallel DECREASES the total resistance. **[3 marks]**

Answer: _____

15. Give one advantage of wiring household lights in parallel. **[2 marks]**

Answer: _____

16. Write down two equations for electrical power. **[2 marks]**

Answer: _____

17. A 230 V kettle draws 10 A. Work out its power. **[2 marks]**

Answer: _____ **W**

18. Write down the frequency and voltage of the UK mains supply. **[2 marks]**

Answer: _____

19. A circuit has a 12 V battery and two 3 Ω resistors.

(a) Work out the current if they are in SERIES. **[3 marks]**

(b) Work out the total resistance if they are in PARALLEL. **[3 marks]**

Answer: _____

20. A 2 000 W heater runs for 30 minutes.

(a) Work out the energy transferred, in joules. **[3 marks]**

(b) Electricity costs 30p per kilowatt-hour. Work out the cost of running it. **[3 marks]**

Answer: _____

21. Explain the role of the National Grid.

(a) State why transformers are used. **[3 marks]**

(b) Explain why a high voltage reduces energy losses. **[3 marks]**

Answer: _____

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