

Simulath · Worksheet 5/5

Fault-finding step by step

Level 2 · Installation · Inspection and testing
Goal: Apply an orderly, safe method to locate faults.



Scan: weekly
challenge

Name: _____ Group: _____ Date: _____

1 Observe · 2 Hypotheses from the diagram · 3 Measure safely from the supply to the load · 4 Isolate, verify and confirm · 5 Repair, test and record

Exercises

1. Which device operates in each case? a) short circuit; b) overload; c) earth leakage.
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2. With the switch closed: 230 V between its input and neutral; 0 V between its output and neutral. Where is the fault?
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3. An incandescent lamp is off with S1 closed: both terminals read 230 V to earth and 0 V between them. What is wrong?
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4. With the switch closed you read 230 V across the lamp terminals and it does not light. Cause?
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5. An insulation test on a domestic circuit (500 V DC) gives 0.2 MΩ. Is it acceptable?
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6. Fault challenge: scan the QR code, solve this week's challenge and explain in your own words why you rule out the other options.
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Simulath · Worksheet 5/5 · Answer key (for the teacher)

Fault-finding step by step



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challenge

1. **Which device operates in each case? a) short circuit; b) overload; c) earth leakage.**
a) MCB, magnetic part (instant). b) MCB, thermal part (delayed). c) RCD.
2. **With the switch closed: 230 V between its input and neutral; 0 V between its output and neutral. Where is the fault?**
In the switch: it does not make contact (open circuit between its input and output).
3. **An incandescent lamp is off with S1 closed: both terminals read 230 V to earth and 0 V between them. What is wrong?**
The neutral is broken between the lamp and the box: the line passes through the lamp and there is no return path.
4. **With the switch closed you read 230 V across the lamp terminals and it does not light. Cause?**
The lamp is blown or badly seated in the lampholder (the open point is in the lamp itself).
5. **An insulation test on a domestic circuit (500 V DC) gives 0.2 MΩ. Is it acceptable?**
No. Spain's ITC-BT-19 requires at least 0.5 MΩ for installations up to 500 V (check your local code). Find the fault.
6. **Fault challenge: scan the QR code, solve this week's challenge and explain in your own words why you rule out the other options.**
Open answer. Reward learners who use the measurements to rule out hypotheses rather than guessing.

Solve this week's fault challenge: simulath.com/en/challenge/

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