

QUESTION 25 (NEW)

Identify the correct statement about the following circuit.

Correct Answer: A

Incorrect Answers: B, C, D, E

Explanation: The circuit is a Wheatstone bridge.

It consists of four resistors arranged in a diamond shape.

The resistors are labeled R1, R2, R3, and R4.

R1 is on the left branch, R2 is on the top branch, R3 is on the right branch, and R4 is on the bottom branch.

The bridge is balanced when the ratio of R1 to R2 is equal to the ratio of R3 to R4.

Mathematically, this is expressed as $\frac{R1}{R2} = \frac{R3}{R4}$.

When the bridge is balanced, the current through R1 is equal to the current through R3.

Similarly, the current through R2 is equal to the current through R4.

Therefore, the correct statement is that the current through R1 is equal to the current through R3.

Statement A is correct: The current through R1 is equal to the current through R3.

Statement B is incorrect: The current through R2 is not equal to the current through R4.

Statement C is incorrect: The current through R3 is not equal to the current through R4.

Statement D is incorrect: The current through R2 is not equal to the current through R3.

Statement E is incorrect: The current through R1 is not equal to the current through R4.

Statement F is incorrect: The current through R2 is not equal to the current through R3.

Statement G is incorrect: The current through R3 is not equal to the current through R4.

Statement H is incorrect: The current through R2 is not equal to the current through R4.

Statement I is incorrect: The current through R1 is not equal to the current through R4.

Statement J is incorrect: The current through R2 is not equal to the current through R3.

Statement K is incorrect: The current through R3 is not equal to the current through R4.

Statement L is incorrect: The current through R2 is not equal to the current through R4.

Statement M is incorrect: The current through R1 is not equal to the current through R4.

Statement N is incorrect: The current through R2 is not equal to the current through R3.

Statement O is incorrect: The current through R3 is not equal to the current through R4.

Statement P is incorrect: The current through R2 is not equal to the current through R4.

