

Answer on Question #46515 – Physics – Other

The advantage of potentiometer over voltmeter in measurements of emf is that

the potentiometer wire is assumed to be uniform
it does not draw current from the circuit under test
the temperature of the wire must remain constant
faults may arise due to breaks or wrong connections in the circuit

Solution:

I

The wire of potentiometer should be of uniform cross sectional area, but it is precaution, not advantage of the potentiometer.

II

A potentiometer is most commonly used as a variable (adjustable) resistor or voltage divider. As measuring instrument, potentiometers are used either as voltage dividers or in the bridge configuration, to compare the measured potential difference with a standard voltage (usually a standard chemical cell). The measurement is done by adjusting the potentiometer so that the drawn current is 0. Thus, it does not affect the measured circuit; the bridge configuration is extremely sensitive, and it can be used to measure extremely small potential differences.

Hence, potentiometer does not draw current from the circuit under test, and it is **correct answer**.

III

The temperature of the wire must remain constant, but it is precaution, not advantage of the potentiometer.

VI

The weak point of potentiometers is the contact point of the adjustment, faults may arise due to breaks or wrong connections in the circuit, and it is disadvantage of potentiometer.

Answer: it does not draw current from the circuit under test

