

Government polytechnic college baran

Question paper first test EE 204

Q1 explain the following terms a) accuracy b) sensitivity

Q2 write the differences between analog and digital instruments.

Q3 explain in detail working of a potentiometer

ANS-1 ACCURACY: more commonly, it is description of system errors, a measure of statistical bias, as these cause a difference between a result and "true" value, also calls with trunes

2 SENSITIVITY: {also called the true positive rate, the recall, or probability of detection in some field} measure the proportion of positive that are correctly identified as such (E.G. the percentage of sick people who are correctly identified as having the condition.)

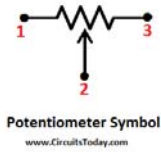
ANS-2 ANALOG INST.

analog	digital
1 The instrument which gives output that varies continuously as quantity to be measured known as analog instrument.	1. the instrument which gives output that varies in discrete steps and only has finite number of values is known as digital instrument is more.
2. The accuracy of analog instrument is less.	2. the accuracy of digital instrument is more.
3. the analog instrument required more	3. the digital instrument required less power
4. sensitivity of analog instrument is more	4. sensitivity of digital instrument as less
5. The analog instrument are cheap.	5. the digital instrument expensive
6. the resolution of analog instrument is less.	6. the resolution of digital instrument is more.

ANS-3 The potentiometers or the "pots", as it is commonly known in the electric circles, is a three terminal variable resistor. Out of its three terminals, two of them are fixed and one is a varying (linear / rotary) terminal.

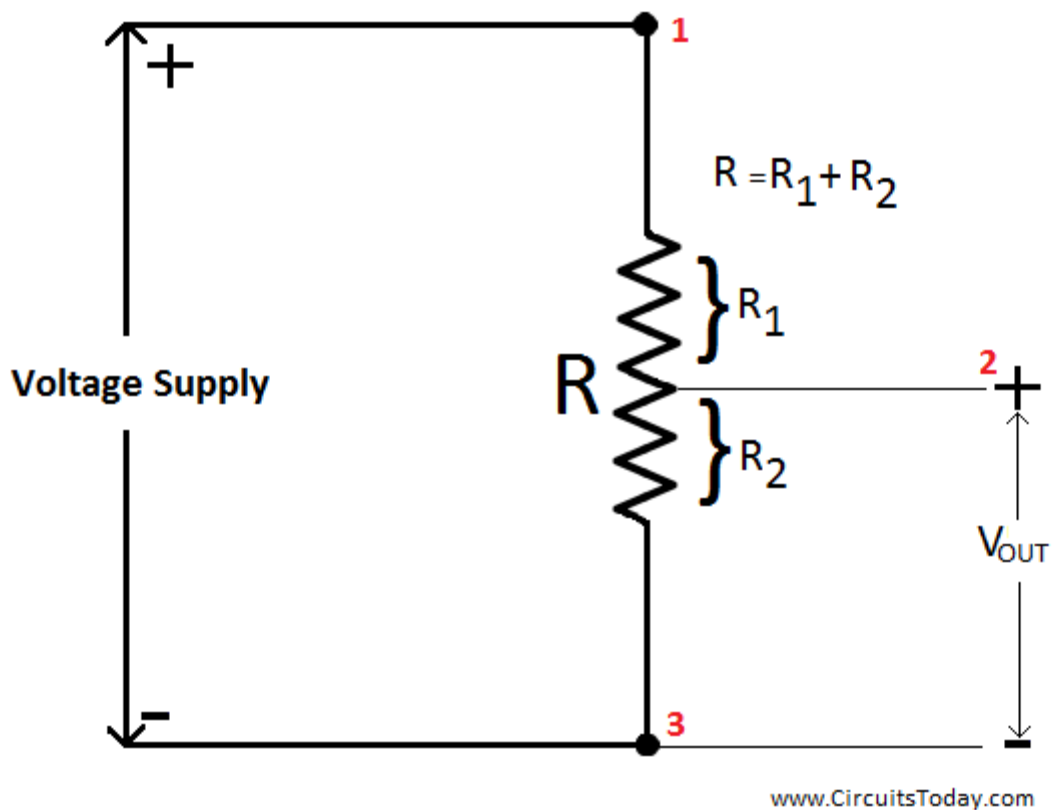
The value of the resistance can be changed from zero to a defined upper limit, by just manually sliding the contact over a resistive strip. As the resistance changes, the current through the circuit changes and hence according to the ohms law, the voltage across the resistive material also changes.

Since it converts rotary or linear motion by the operator into a change in resistance (hence a change in electric parameter), it can be called an electro-mechanical transducer. They are passive in nature, therefore dissipate power rather than supplying power to the circuit.



As already discussed, a potentiometer has three terminals. When connected to a circuit, the two fixed terminals are connected to the ends of the resistive elements while the third terminal is connected to the wiper.

In the circuit diagram shown below, the terminals of the potentiometer are marked 1, 2 and 3. The voltage supply is connected across terminals 1 and 3, positive lead to terminal one while negative lead to terminal three. The terminal 2 is connected to the wiper.



1,2,3 - Terminals

Potentiometer Circuit Diagram

Now a closer look into the figure, we can see that at the current position of wiper, there are two resistive paths just like the resistor is split into two resistors. Out of these two resistors, the one having longer resistive path will have a higher resistance. This is due to the fact that resistance of a resistor depends on its length (since $R=\rho l$). Higher the length, higher is the resistance, provided the material of the resistor and its cross-sectional area remains same.