

The Mechanical Universe EQUIPOTENTIALS AND FIELDS 12min

Felix

Read the following questions before the video begins. Answer them while the video is in progress. To complete this assignment successfully, you must listen carefully to the narration. Do not get distracted by the visual effects. Unless the instructor tells you otherwise, do not ask others for answers or copy answers from other people's sheets since doing so is cheating.

1. Contour lines are lines of constant height (or elevation).
2. Separation of lines of equipotential indicates the electric field.
3. The electric field tells us how much the electric potential changes with respect to the change in position.
4. The field is (PARALLEL / **PERPENDICULAR**) to each equipotential at every point.
5. Neon lights use about 10,000 volts.
6. The van de Graaff generator causes sparks by ionizing air by
 - A. the large electric force ripping electrons from their atoms.
 - B. accelerated electrons colliding with atoms, knocking electrons off in the process.**
 - C. ionizing radiation given off by the van de Graaff generator.
 - D. the van de Graaff does not cause ionization to occur, the sparks aren't real.
7. The van de Graaff reaches a high voltage before sparks discharge it but cannot store very much charge.
8. A common radio battery stores ten times as much energy as VanMaren's generator.
9. Charge and field; energy, voltage, and force are the stuff of electricity. And that's the stuff that holds the universe together.
10. FREE!

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1. The separation of the contour lines indicates the slope of the terrain.
2. In this analogy, electric potential is elevation and electric field is the [downward] slope.
3. It takes no work to move a charge along a curve of constant potential.
4. The electric field is always (PARALLEL **PERPENDICULAR**) to the surface of a metal.
5. The air around a van de Graaff generator always contains a few accidental
A. protons B. neutrons C. ions **D. electrons**
6. The energy an electric device can deliver depends on its voltage and how much charge it has available.
7. A battery has a much lower voltage than a van de Graaff (or Van Maren's generator) but can store much more charge.
8. (**MOST** / **VERY LITTLE**) of the energy stored in the water behind a dam is converted to electrical energy.
9. Charge and field; energy, voltage, and force are the stuff of electricity. And that's the stuff that holds the universe together.
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