Language work – Conducting... words

▶ **Look at the two pictures, the first at the bottom of page 180 and the second, here, on the right. What do they show? What is the connection between the pictures and the topic of the Unit? What is the common element in all these words? Discuss. Then, to check your answers, do the activity below, in which you have to choose the correct option;**

The two pictures show two different types of conductors, the first a train conductor, and the second an orchestra conductor. The current Unit is about semiconductors. The word *conductor* is derived from the verb to **conduct** (from the Latin verb *ducere*, meaning 'to lead', or 'guide'). Train, bus, or tram conductors lead (= help) the passengers, whereas music conductors guide the orchestra.

In electrical contexts, to **conduct** means to allow electricity to pass through or **(1) along / across** something. When, for example, we say that *copper conducts electricity well*, we mean that copper acts as a **(2) middle / medium** for conveying or transmitting electricity.

Conductors are materials that let electrons flow freely from particle to particle (see also Unit 3). Many metals, such as copper, iron, and steel, are good **electrical conductors**. In **(3) opposite / contrast** to conductors, **insulators** are materials that do not allow current to flow easily through them. Wood, plastic, glass, and rubber are good **electrical insulators**.

Certain materials, when cooled below a certain threshold temperature, known as *critical temperature*, **(4) loosen / lose** all electrical resistance and allow electrical current to flow through them. These materials are called **superconductors** (or **superconductive** materials, or materials that achieve **superconductivity**).

Electrical **conduction** (or **conduction of electricity**) is the **(5) transfer / transform** of electrically charged particles through a material, or, in other words, the passage of electricity through a conductor.

Electrical **conductance** (G), measured in siemens (S), represents the **(6) ease / comfort** with which an electric current passes through a component. It is the opposite of electrical resistance. In simple terms, electrical conductance tells you how good a conductor a component is; the higher the conductance, the **(7) worse / better** the component is at **conducting**.

Electrical **conductivity** or *specific conductance* (σ), measured in siemens per metre (S/m), represents a material's ability to conduct electric current. It is a material property and not a component property. In very simple terms, we talk about the *conductivity* of copper, but the *conductance* of a **(8) specific / special** piece of copper wire. Conductivity is the **(9) inverse / diverse** of **resistivity**.

To put it in a nutshell, the conductance of a piece of wire depends **(10) from / on**: a) the material it is made from (the material's conductivity [σ]), b) its length (the longer the wire, the **(11) lower / higher** the conductance), and c) its cross-sectional area (the bigger the area, the higher the conductance).

I get my love of music
from my father,
who was a conductor.
He always listened
to the radio on his bus.