Text B – Metals, Non-Metals, Metalloids

► **Read the text and underline the correct option:**

The elements can be classified according to their chemical and physical properties **1. at / into / in** the major categories of *metals*, *nonmetals*, and *metalloids* or *semi-metals*. In the periodic table of the elements, metals are divided **2. with / from / to** non-metals by a staircase line. Metals are located to the left and non-metals to the right of this line, with metalloids lying alongside the line. The elements **3. on / from / through** the right of the staircase line tend to gain electrons, while the elements to the immediate left of the line tend to lose electrons. Their metallic character tends to decrease as you move from left to right, while it increases as you progress **4. under / below / down** from top to bottom in the group. This trend is more pronounced in the middle groups of the periodic table. For example, in group 14, carbon is a nonmetal, silicon and germanium are metalloids, while tin and lead are metals.

Metals are distinguished into alkali metals, alkaline earth metals, inner transition metals and transition metals. Metals are lustrous (shiny), malleable[1] and ductile[2], and have relatively high electrical and heat conductivities. All metals, **5. apart / without / except** mercury, are solids at room temperature and pressure. Most commercial metals are alloys containing small quantities of other metals, which add desirable characteristics to them. For example, aluminum is often alloyed with magnesium and copper **6. for / with / to** extra strength.

Nonmetals comprise carbon, nitrogen, phosphorus, oxygen, sulfur, and selenium. More than half of them are gases, one is liquid, and some are hard or soft solids at room temperature and pressure. Nonmetals exhibit a rich variety of chemical behaviors. They include the most reactive and the **7. list / least / less** reactive of elements, and they form different ionic and covalent compounds. They are nonlustrous, poor conductors of heat and electricity and they tend to be brittle. Unlike metals, which crystallize in closely packed arrays that do not contain molecules or covalent bonds, nonmetal structures contain covalent bonds, and may consist **8. from / of / with** individual molecules.

Metalloids include boron (B), silicon (Si), germanium (Ge), arsenic (As), antimony (Sb), tellurium (Te), and polonium (Po). They fall between metals and nonmetals in the periodic table and, therefore, share some physical properties with metals and some with nonmetals; for example, boron is not malleable, like most metals, but brittle like nonmetals. Metalloids are semiconductors because their electrons are more tightly bound **9. by / at / to** their nuclei. Furthermore, their chemical behavior falls **10. from / between / off** that of metals and nonmetals. For example, like nonmetals, pure metalloids form covalent crystals, and, like metals, they generally fail to form monatomic anions.

Did you know?

Pb (lead) comes from the Latin word *Plumbum* (pipe) which is related to the English word *plumber*. Why?

Answer: Because pipes were originally made of lead.

► **Which of the following characteristics refer to metals and which to nonmetals? In each group, underline those that are correct. Try to complete the third row.**

- **Metals:** nonlustrous, lustrous, malleable, ductile, nonconductors of heat
- **Nonmetals:** lustrous, brittle, conductors of heat
- **Metalloids:** _____

1. **malleable:** they can be pressed into thin sheets
2. **ductile:** they can be drawn into wire