

**Mila university center**

**English for specific purposes (technical English)**

**Department of ST**

**Task 4**

When a machine or a tool is made, the most suitable material must be chosen by considering its properties, which can be classified as mechanical, thermal, electrical and chemical. The main types of materials used in mechanical engineering are metals, polymer materials, ceramics and composite materials. The most commonly used materials are metals, which can be divided into ferrous and non-ferrous. They can be used in their pure form or mixed with other elements. In this second case we have an alloy and it is used to improve some properties of the metals. The most commonly used ferrous metals are iron and alloys which use iron. Because iron is soft and pasty it is not suitable to be used as a structural material, so a small amount of carbon is added to it to make steel alloy. Non-ferrous metals contain little or no iron. The most common non-ferrous metals used in mechanics are copper, zinc, tin and aluminium. Some common non-ferrous alloys are brass (formed by mixing copper and zinc), bronze (formed by mixing copper and tin) and other aluminium alloys which are used in the aircraft industry. Other examples of materials used in mechanical engineering are plastic and rubber. PVC or polyvinyl chloride is a type of plastic and is used to insulate wires and cables: Rubber is a polymer and its best property is elasticity, as it returns to its original size and shape after deformation. Ceramic materials are good insulators: hard, resistant and strong, but brittle. Composite materials are made up of two or more materials combined to improve their mechanical properties. Concrete is reinforced with steel and is used in building engineering.

**- Read the text then answer the questions**

- 1- What is the basic classification of metals?
- 2- Which materials are good insulators?
- 3- What are the characteristics of iron?
- 4- Is steel an alloy? which metal does it contain? 3

5- Why are alloys created?

**- Read the text again and match the words with their definitions**

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|----------------------|--|
| 1- alloy             | a- a type of plastic used for insulation       |
| 2- steel             | b- a combination of different metals           |
| 3- PVC               | c- an alloy formed by mixing iron and carbon   |
| 4- concrete          | d- an alloy formed by mixing copper and zinc   |
| 5- brass             | e- metals containing iron                      |
| 6- ferrous materials | f- a composite material used to build houses   |
| 7- ceramic           | g- a metal not suitable as structural material |
| 8- iron              | h- a good insulator but brittle                |