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Université De M'sila
Faculté De Technologie
Département De Génie Mécanique

Corrigé type de l'examen : Anglais 2

Techniques de production industrielle (Master 1)

Question 1

Fill in the blanks with suitable prepositions

Text1: Iron and Steel (7pts)

The earth contains a large number of metals, which are useful to man. One of the most important of these is iron. Modern industry needs considerable quantities of this metal, either in the form of iron or in the form of steel. A certain number of non-ferrous metals, including **aluminium and zinc**, also important.

The iron ore, which we find in the earth, is not pure. It contains some impurities, which we must remove by smelting. The process of smelting consists of **.heating the ore in a blast furnace with coke and limestone, and reducing it to metal. Blasts of hot air enter the furnace from the bottom and provide the oxygen, which is necessary for the reduction of the ore. The ore becomes molten, and its oxides combine with carbon from the coke.** The non-metallic constituents of the ore combine with the **limestone** to form a liquid slag. This floats on top of the molten iron, and passes out of the furnace through a tap. The metal, which remains, is pig iron.

We can melt this down again in another furnace - a cupola - with more coke and limestone, and tap it out into a ladle or directly into moulds. This is cast-iron. Cast-iron does not have the strength of steel. It is brittle and may fracture under tension.

But it possesses certain properties which make it very useful in the manufacture of machinery. Cast-iron contains small proportions of other substances. These non-metallic constituents of cast-iron include **carbon, silicon and sulphur**, and the presence of these substances affects the behaviour of the metal. Iron which contains a negligible quantity of **carbon**, for example wrought-iron, behaves differently from iron which contains a lot of carbon.

Text 2: Welding (7pts)

There are a number of methods of joining metal articles together, depending on the **type of metal and the strength of the joint** which is required. Soldering gives a satisfactory joint for light articles of steel, copper or brass, but the strength of a soldered joint is rather less than a joint which is brazed, riveted or welded. The ends of metal are heated to a white heat - for iron, the welding temperature should be about 1300° C - in a flame. At this temperature the metal becomes **plastic**. The ends are then pressed or hammered. Moreover, the heating of iron or steel to a high temperature causes **oxidation**, and a film of oxide is formed on the heated surfaces. The heat for fusion welding is generated in several ways, depending **on the sort of metal which is being welded and on its shape**. The electrodes are sometimes made of carbon, but more frequently **they are metallic**. The work itself constitutes one of them and the other is an insulated filler rod. An arc is struck between the two, and the heat which is generated melts the metal at the weld. A different method is usually employed for welding sheets or plates of metal together. This is known as spot welding.

Two sheets or plates are placed together with a slight overlap, and **a current** is passed between the **electrodes**. At welding temperature, a strong **pressure** is applied to the metal sheets. The oxide film, and any impurities which are trapped between the sheets, are squeezed out, and the weld is made.

Question 2 6pts

Translate the following words to French language

Cooling = Refroidissement

Manufacture = Fabrication

Molten state = Etat fondu

Shaping = Mis en forme

Bending = Flexion

Twisting = Torsion