Fachhochschule Südwestfalen – Technische Betriebswirtschaft

Final Exam Technisches Englisch

13 July 2021

I. Shorten the following sentences by using participle or reduced relative clauses. Front the relative clause where possible (two points for each correct sentence).

1. After the trash has been shredded, it falls onto another conveyor belt.

2. McDouglas' process can also separate and recover the sulphur which is added to most tires in the vulcanization process.

3. It is a special cable that links the computer to the cellular phone.

4. After the service center has checked the billing information, it authorizes the call.

II. Write down how the equations are read in English. (Number of points at the end)

1. $x[(a-b)(a+b)-12]=8$ (3)

2. $\frac{-b+\sqrt{d-4ac}}{2x^3}=10$ (3)

III. Circle the syllable which is stressed in the following words (one point for each correct answer)

1.	perpendicular	per - pen -di - cu - lar
2.	cylinder	cy - lin - der
3.	diameter	di - a - me - ter
4.	transparent	trans – pa – rent

IV. Below is a short description of how a vacuum cleaner works. Which terms in the text match with the numbers in the drawing (one point for each correct match)?

When you sip soda through a straw, you are utilizing the simplest of all suction mechanisms. Sucking the soda up causes a pressure drop between the bottom of the straw and the top of the straw. With greater fluid pressure at the bottom than the top, the soda is pushed up to your mouth.

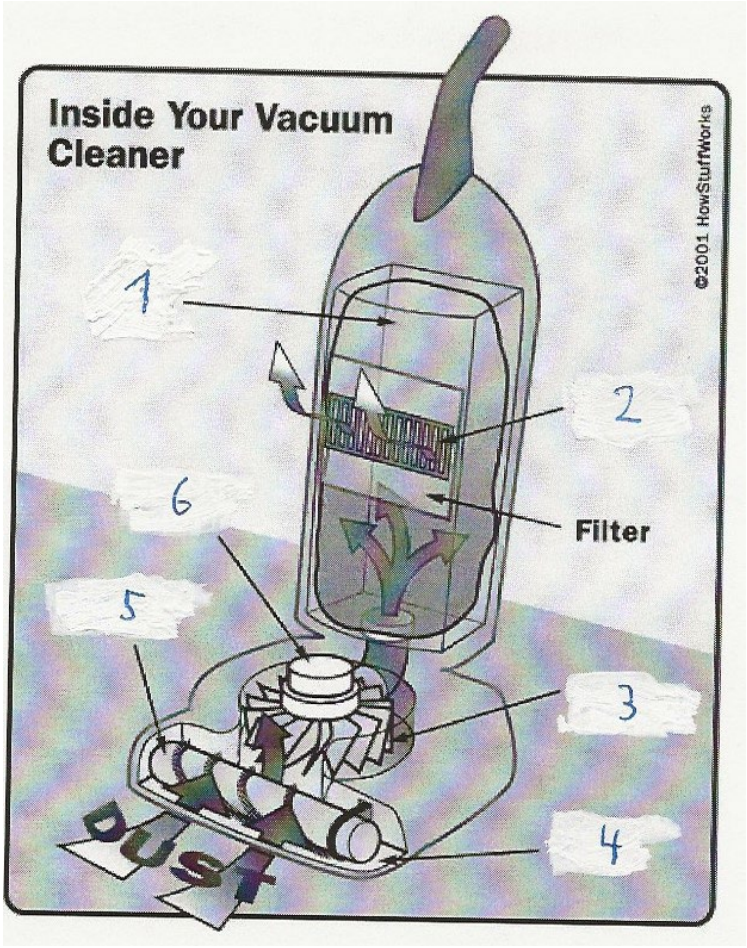
This is the same basic mechanism at work in a vacuum cleaner, though the execution is a bit more complicated. In this article, we'll look inside a vacuum cleaner to find out how it puts suction to work when cleaning up the dust and debris in your house. As we'll see, the standard vacuum cleaner design is exceedingly simple, but it relies on a host of physical principles to clean effectively.

When you plug the vacuum cleaner in and turn it on, this is what happens:

1. The electric current operates the motor. The motor is attached to the fan, which has angled blades.
2. As the fan blades turn, they force air forward, toward the exhaust port.
3. When air particles are driven forward, the density of particles (and therefore the air pressure) increases in front of the fan and decreases behind the fan.

This pressure drop behind the fan is just like the pressure drop in the straw when you sip from your drink. The pressure level in the area behind the fan drops below the pressure level outside the vacuum cleaner (the ambient air pressure). This creates suction, a partial vacuum, inside the vacuum cleaner. The ambient air pushes itself into the vacuum cleaner through the intake port because the air pressure inside the vacuum cleaner is lower than the pressure outside.

As long as the fan is running and the passageway through the vacuum cleaner remains open, there is a constant stream of air moving through the intake port and out the exhaust port. But how does a flowing stream of air collect the dirt and debris from your carpet? The key principle is friction.



In the last section, we saw that the suction created by a vacuum cleaner's rotating fan creates a flowing stream of air moving through the intake port and out the exhaust port. This stream of air acts just like a stream of water. The moving air particles rub against any loose dust or debris as they move, and if the debris is light enough and the suction is strong enough, the friction carries the material through the inside of the vacuum cleaner. This is the same principle that causes leaves and other debris to float down a stream. Some vacuum designs also have rotating brushes at the intake port, which kick dust and dirt loose from the carpet so it can be picked up by the air stream.

As the dirt-filled air makes its way to the exhaust port, it passes through the vacuum-cleaner bag. These bags are made of porous woven material (typically cloth or paper), which acts as an air filter. The tiny holes in the bag are large enough to let air particles pass by, but too small for most dirt particles to fit through. Thus, when the air current streams into the bag, all the air moves on through the material, but the dirt and debris collect in the bag.

The vacuum cleaner bag is simply a filter that lets air pass through but keeps dirt in. You can put the vacuum-cleaner bag anywhere along the path between the intake tube and the exhaust port, as long as the air current flows through it. In upright vacuum cleaners, the bag is typically the last stop on the path: Immediately after it is filtered, the air flows back to the outside. In canister vacuums, the bag may be positioned before the fan, so the air is filtered as soon as it enters the vacuum.

V. Complete the following sentences by converting the word in brackets into the correct part of speech (noun, verb, adjective, adverb) (1 point for each correct answer).

The Primera 140 is a powerful and **(high)** _____[1] **(efficient)** _____[2] saddle stitcher [Sammelhefter] for the mid performance range. Thanks to a new ergonomic design and modern control concept, it is **(extreme)** _____[3] **(user-friendliness)** _____[4] and can be set up **(quick)** _____[5] and **(ease)** _____[6] . The Primera 140 is a **(flexibility)** _____[7] production line tailored to the requirements of print finishing. **(Importance)** _____[8] technological findings from the high end range are included in the Primera 140. As a result, customers benefit from an **(extreme)** _____[9] **(reliability)** _____[10] saddle stitcher which guarantees a **(height)** _____[11] degree of (**efficient**) _____[12] and thus an optimum **(compete)** _____[13] position.

VI. In the following process description, put the verb in brackets in the correct form (one point for each correct answer). Be careful, if you need the passive, you sometimes also have to add the preposition "by"!

From bauxite to alumina – The refining process

First of all, bauxite (extract) _____[1] from the ground. Then, it (carry) _____[2] from the mine on conveyor belts to crushers, where the rock (grind) _____[3] into powder.

Next, the mineral (feed) _____[4] into the digester tank, where it is dissolved (auflösen) in sodium hydroxide, heated and pressurized. This process (dissolve; add *by* if passive) _____[5] the aluminium oxide, while the impurities remain suspended in a solid state.

From here, the mixture is passed through a filter, which (remove; add *by* if passive) _____[6] the impurities.

The resulting solution then (pump) _____[7] into 30-metre-high precipitator tanks. As the solution (cool down) _____[8], crystals of pure alumina are formed, which then (sink) _____[9] to the bottom.

Then, the crystals formed from the precipitation process (collect) _____[10] and (remove) _____[11] from the solution. Then, the remaining solution is siphoned off (abschöpfen) and returned to the digester to (recycle) _____[12].

The crystals removed from the solution are then passed through rotary furnaces, where they (heat) _____[13] to 1100°C. In a next step, they are calcinated, or dried out. The end product of this process is a white powder composed of pure alumina. This powder is the raw material used for smelting aluminium.

VII. Convert the structures below into passive sentences with modal or semi-modal verbs indicating that the action is unnecessary, essential or recommended. Do not use the same (semi-) modal verb twice in each category (two points for each correct sentence with a new (semi-)modal).

1) Unnecessary: In general, masks / not wear during outdoor activities
2) Unnecessary: Masks / not replace after a short one-time use
3) Essential: Before entering Germany, everybody / test for the coronavirus
4) Essential: Barbershops / not enter without a positive corona test result
5) Recommended: Certified FFP2 masks / make available to all people in nursing homes
6) Recommended: People who work in hospitals / vaccinate (impfen) against the coronavirus before everybody else