

**Ostfalia Hochschule für angewandte Wissenschaften  
Fakultät Fahrzeugtechnik**

Klausur: Technisches Englisch 1 für Fahrzeugtechnik  
Semester: Sommersemester 2022  
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**Bearbeitungszeit:** 60 Minuten (+ 15 Minuten für Speichern/Zurücksenden)

**Hilfsmittel:** alle Vorlesungsunterlagen, Wörterbuch Englisch-Deutsch/Deutsch-Englisch

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**Nach Ende der Bearbeitungszeit (60 Minuten) speichern Sie die Klausur bitte wie folgt**

**„TE 1 Nachname\_Vorname“**

**und senden Sie an mich unter**

**[a-m.krause@ostfalia.de](mailto:a-m.krause@ostfalia.de)**

**zurück.**

***Dadurch, dass Sie die bearbeitete Klausur an mich zurücksenden, bestätigen Sie, dass Sie die Klausur eigenständig und ohne andere als die oben angegebenen Hilfsmittel bearbeitet haben.***

**Viel Erfolg!**

## GRAMMAR

### 1. Present perfect or simple past?

\_\_\_/6 p.

- 1) She \_\_\_ has already started\_\_\_\_\_ (already / start) to work with this company.
- 2) \_\_\_ Did you do\_\_\_\_\_ (you / do) any project work at your company last year?
- 3) When \_\_\_\_\_ did Henry Ford invent\_\_\_\_\_ (Henry Ford / invent) the assembly line?
- 4) The engineer \_\_\_ hasn't read\_\_\_\_\_ (not / read) the specification yet.
- 5) Our company \_\_\_\_\_ launched\_\_\_\_\_ (launch) a new car yesterday.
- 6) What \_\_\_\_\_ did you do\_\_\_\_\_ (you / do) before starting your apprenticeship?

### 2. Rewrite the following active sentences using the passive. Write in the same tense [Zeit] as in the active sentence.

\_\_\_/10 p.

1) The mechanics are repairing the car at the moment.  
The car is being repaired by the mechanics, at the moment.

2) They have reorganized the project.  
The project has been reorganized by them.

3) When will you finish the project?  
When will the project be finished by you?

4) Our boss did not show us the new office building on Friday.  
The new office building wasn't shown by our boss on Friday

5) The crane lifts the containers.  
The containers are lifted by the crane.

## GRAPH DESCRIPTION

(8 + 8 points)

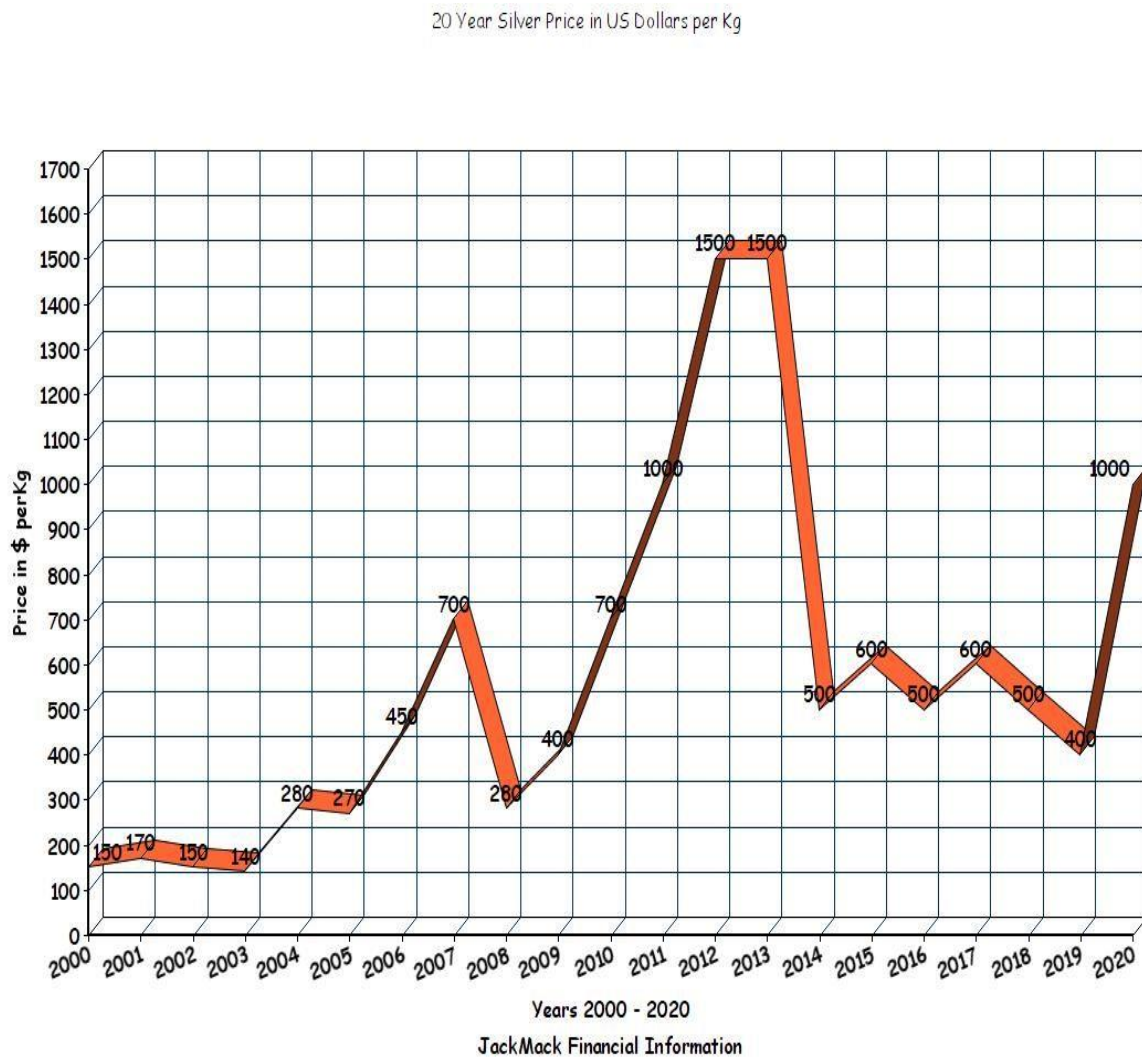
The following graph shows the price of silver in US dollars per kilogram over 20 years from the year 2000 to 2020.

Write an introductory sentence.

Then briefly describe the following 7 phases of the graph. (Write in full sentences.)

- 1) From 2000 to 2007
- 2) From 2007 to 2008
- 3) From 2008 to 2012
- 4) From 2012 to 2013
- 5) From 2013 to 2014
- 6) From 2014 to 2019
- 7) From 2019 to 2020.

Use a variety of vocabulary as well as adjectives, adverbs and prepositions in your text.



Write your text onto the next page.

Starting in the year 2000, the value of silver grew at a fair rate till 2007.  
After a short drop, the value began to grow quite rapidly till it peaked in 2012, after which it crashed, reaching a low point in 2014.  
Lastly, the price of silver continued to remain stable up until 2019 where it started to spike again.

## TEXT

(13 + 3 points)

Read the following text and answer the questions (on the next page) in your own words and in full sentences.

Internal combustion engines work on the same principle:

Inside a cylinder a fuel-air mixture is burnt, creating pressure that moves the piston, which, in turn, rotates the crankshaft that transmits the power to the wheels.

The engines, named after their inventors Nicolai Otto and Rudolf Diesel, differ in the fuel used and the way they operate. In a petrol engine a mixture of fuel and air is compressed to 8-18 bar. At a temperature of 400° to 600°C it is ignited by a spark produced by a plug. In a diesel engine, fuel is sprayed into the cylinder after air is compressed up to 50 bar, reaching 900°C. The extremely high temperature makes the mixture ignite spontaneously. This is known as compression ignition or self-ignition. Higher temperature in the combustion of diesel means more soot and nitrogen oxide (NOx) gases but fewer CO2 emissions than in the exhaust of petrol engines.

Nitrogen oxide emissions from diesel engines have been made responsible for poor air quality in many inner cities.

The UK government announced it would ban the sale of new diesel cars by 2040 but some Members of Parliament wish the ban to be introduced in 2032. Scotland has set an even earlier target.

Environmental campaigners believe creating “clean air zones” in the most polluted towns and cities is the most effective and speedy way of reducing emissions of nitrogen dioxide. Councils will be able to impose these zones and will be able to block certain vehicles or impose a daily charge on drivers.

The government’s research suggests that “clean air zones” are the most effective means of getting emissions down, cutting them by 18% compared with 0.02% for a scrappage scheme.

Yet some people argue these “zones” can cause all sorts of complications for local areas. For example, if a council in one town imposes a “clean air zone” and its neighbour does not, will traffic (and the emissions caused) merely move to the neighbouring location?

Most of the breaches with diesel emissions happen on 81 roads around the UK, says the government, mostly in the hearts of urban areas. It wants councils to target these roads with a range of tactics that cut nitrogen dioxide, including removing speed bumps and changing traffic lights so that traffic is not slowing down or speeding.

## Vocabulary

breach – Gesetzesverstoß

council – local authority [Stadtverwaltung]

(to) impose s.th. – to order s.th. to be done/realised

scrappage scheme – Abwrackprämie oder Steuererleichterung bei Neuwagenkauf

soot – black substance produced when s.th. is burnt

speed bump – Bodenschwelle

### Questions on the text

1. Explain the key differences between a petrol and a diesel engine in the second and third stroke. (2 p.)

While Diesel can be ignited solely by compression petrol needs an electric spark. Therefore, Diesel engines achieve a higher compression compared to petrol engines.

2. What are the negative impacts of petrol and diesel engines on the environment? (1 p.)

Diesel engines produce less carbon dioxide, however, they produce a number of toxic chemical compounds, resulting from the incomplete combustion of diesel fuel. Additionally, diesel engines produce a higher level of nitrogen oxide compounds, which contribute significantly to global warming. Petrol engines, on the other hand, produce a cleaner exhaust, as they work with lower temperatures and pressures.

3. What measures does the UK want to introduce to reduce harmful emissions in the air? Name three of them. (3 p.)

The UK government promised to ban all diesel vehicles by 2040. However, many parties are advocating for an earlier date such as 2032. Furthermore, they have started measuring the emission along the roads in the UK, to determine where the emission is the highest, to put clean air zones into place, so that polluting cars are not allowed to drive through.

4. Choose two of the measures to reduce harmful emissions and briefly explain if they are effective and actually reduce pollution. (4 p.)

Banning diesel cars altogether by 2040 will decrease pollution. A scrappage scheme can help to make the transfer for people easier.

5. Beyond the text: Decide if the following statements are true or false. Correct the false ones. (3 p.)

a) Two-stroke engines have no camshafts. true/false  
-True

b) The up and down motion of the piston in the cylinder is converted into rotational motion by the camshaft. true/false

-False. The up and down motion of the piston in the cylinder is converted into rotational motion by the crankshaft

c) In a diesel engine, the fuel is ignited by the spark plug. true/false

-False. A diesel engine doesn't need a spark plug, the fuel will be ignited by compression alone.

## FURTHER TOPICS

(14 + 2 points)

### 1) Materials and their properties

1.1) Complete the following definitions with an adjective each and then give an example of a material for each property. [5 p.]

a) A material, the surface of which is impact-resistant, is \_\_\_\_\_ tough \_\_\_\_\_; example: \_\_\_\_\_ steel \_\_\_\_\_.

b) A material that can be stretched easily without breaking and returns to its original shape and size when the force is no longer applied is \_\_\_\_\_ elastic \_\_\_\_\_; example: \_\_\_\_\_ rubber \_\_\_\_\_.

c) A material which can be deformed by hammering, rolling or pressing and which keeps its new shape is \_\_\_\_\_ malleable \_\_\_\_\_; example: \_\_\_\_\_ copper \_\_\_\_\_.

d) A material that breaks easily is \_\_\_\_\_ brittle \_\_\_\_\_; example: \_\_\_\_\_ glass \_\_\_\_\_.

e) A material through which heat or electric current can be passed is \_\_\_\_\_ conductive \_\_\_\_\_; example: \_\_\_\_\_ copper \_\_\_\_\_.

### 2) Nanotechnology in the automotive industry

2.1) The primary factor for the adoption of nano-based research in the automotive industry is the reduction of the environmental footprint of vehicles. Briefly explain what is meant by “the environmental footprint of vehicles”. (Write in full sentences.) [1 p.]

The environmental footprint of vehicles describes how much natural resources was used when manufacturing a car and how much emission said car will have. Goal is to use the least amount of natural resources and produce the least amount of emission possible.

2.2) How can a lower fuel consumption of cars be achieved through the application of nanotechnology in automotive engineering? Name and explain two aspects and write in full sentences. [3 p.]

The first aspect is the approach of trying to make the car weigh less, this can be achieved by using a lighter material.

Another aspect is the use of nanocoating. By coating the engine and gearbox friction and wear will decrease leading to higher efficiency and lower fuel consumption.

### 3) Designing cars

3.1) What is a “crowd-sourced” car (like the ones manufactured by the US-company Local Motors)? Answer the question and name an advantage and a disadvantage of such a car. (Write in full sentences.) [2 p.]

A “crowd-sourced” car is a car designed by a web-community.

Crowd sourcing allows creators to receive direct feedback from potential consumers. However, confidentiality will suffer as the product and all its information will be publicly accessible.



3.2) If you compare the design of the Mini Cooper and the VW Beetle – which car is more aerodynamic and why and what are the advantages of increased aerodynamics? (Write in full sentences.) [3 p.]

The VW Beetle is more aerodynamic than the Mini Cooper. Unlike the Beetle, the Mini suffers from its boxy shape. The advantages of increased aerodynamics include a reduced drag, resulting in a lower overall fuel consumption.