Listening Test

PACK TO THE FUTURE

TASK 1: Packing with Care

(Audiotrack: QR-Code rechts / Hörtext S. 12)

You will hear five statements about various kinds of packaging. What **main advantage** are the people talking about? **Write the correct numbers (1 – 5) in the boxes next to the categories (A – H).** Be careful: Use each number only once.
(You will have 5 seconds after the first listening and 5 seconds after the second listening.)

A ☐ Cheaper price
B ☐ High-end hygiene
C ☐ Easy recycling
D ☐ Minimal weight
E ☐ Natural resources
F ☐ Great stability
G ☐ Blocking out sunlight
H ☐ Global shipping

5 P

TASK 2: Nature's Best Practice

(Audiotrack: QR-Code oben / Hörtext S. 12)

You will hear an interview with a biologist from the Biomimicry Institute.
One ending to each of the following sentences (1 – 4) is correct. Tick (⎷) A, B, C or D.
(You will have 5 seconds after the first listening and 5 seconds after the second listening.)

1 Biomimicry is used to …

A ☐ inspire inventions.
B ☐ improve farming.
C ☐ save nature.
D ☐ teach biology.

2 The six-sided structure of packaging …

A ☐ attracts bees.
B ☐ lets light shine through.
C ☐ needs little material.
D ☐ is expensive to produce.

3 The Macadamia nutshell …

A ☐ is as tough as wood.
B ☐ has a multilayer coating.
C ☐ is meant to break easily.
D ☐ inspired heavy duty packaging.

4 The Pomelo peel …

A ☐ is the heaviest fruit coating.
B ☐ influenced construction.
C ☐ has different pore sizes.
D ☐ is used to produce sponges.

4 P

TASK 3: A Road Full of Bottlenecks
(Audiotrack: QR-Code S. 1 / Hörtext S. 13)

You will hear a radio podcast about a way of reusing plastic packaging.
There are six wrong words in the text. Write their correct versions on the lines provided.
(You will have 10 seconds after the first listening and 15 seconds after the second listening.)

A Road Full of Bottlenecks **6 P**

In 2018, the world's first plastic bicycle trail made of recycled bottles and packaging opened in the Netherlands.
The 30 metre track is made of recycled plastic equivalent to more than 218,000 plastic cups, and three times more durable than an asphalt alternative. It also contains sensors to monitor the road's performance, including its temperature, its stability to cope with the traffic and the number of bikes that pass over it.
The prefabricated sections of the bicycle lane are light and hollow. This makes them easy to transport and 70 percent quicker to fit. Cables and utility pipes can be easily installed inside, and the path is designed to drain off immense rainfall.
Despite its advantages, some doubts have been raised about the plastic path. Scientists have warned that small particles of the plastic could find their way into the living environment.
Nevertheless, the successful trial run has paved the way for larger scale projects worldwide.

Adapted from:
Boffey, Daniel. A Road Full of Bottlenecks: Dutch Cycle Path is Made of Plastic Waste [online available on: https://www.theguardian.com]

TASK 4: Customer Service
(Audiotrack: QR-Code S. 1 / Hörtext S. 13)

You will hear a phone call to the customer service of an online retailer. **Listen and take notes.**
You do not have to write complete sentences but **one word per line is not enough.**
(You will have 10 seconds after the first listening and 20 seconds after the second listening.) **7 P**

	NOTES	
1	**Who to contact next:**	_____
2	**Required information and documents:**	▶ _____
		▶ _____
3	**Period to report the problem:**	_____
		_____
4	**Advantages for next order:**	▶ _____
		▶ _____
5	**Voucher code:**	___ ___ – ___ ___ ___ ___ – ___ ___ ___ ___

TASK 5: Alternative Packaging
(Audiotrack: QR-Code S. 1 / Hörtext S. 14)

You will hear a radio podcast about modern ways of packaging. **Listen and take notes.**
Be careful, **one word per line is not enough.**
(You will have 30 seconds after the first listening and 90 seconds after the second listening.) **8 P**

	ALTERNATIVE PACKAGING	
1	**RevoMat consists of:**	_____
2	**Mr Khan's research goals (2 details):**	▶ _____
		▶ _____
3	**Advantages of this new non-plastic material (2 details):**	▶ _____
		▶ _____
4	**Consequences of a growing aluminium market (2 details):**	▶ _____
		▶ _____
5	**Prize that Stella Ford Award winners get:**	_____

Written Test

LIGHT UP YOUR WORLD

PART I: Reading

TASK 1

Read the text Viewing the Polar Lights: Heavenly Visual Music – But at What Cost? (page 11).
Which of the paragraphs of the text (**A – F**) matches the headings (**0 – 7**) best?
Write the correct numbers in the boxes. One heading (0) has already been put in the correct place.
Use each number only once. Be careful, there are some headings that you do not need to use. **5 P**

A lines 4 – 8

B lines 9 – 15

C lines 16 – 18

D lines 19 – 24

E lines 25 – 32

F lines 33 – 42

0 The Shape of the Aurora

1 Spotlight on Ancient Beliefs

2 Advantages for Tourists

3 A Trend is Born

4 The Dramatic Downside

5 Auroral Sounds in Mythology

6 The Voices of Light

7 In the Light of Science

A	B	C	D	E	F
		0			

TASK 2

Read the text *Viewing the Polar Lights: Heavenly Visual Music – But at What Cost?* (page 11).
Are sentences 1 – 10 'True' (T) or 'False' (F)? Choose 'Not in the text' (N) if there is not enough information to answer 'True' or 'False'. **Tick (*X*) the correct answer.** **10 P**

		T	F	N
1	Torne River looked like a green ribbon when the author travelled to Sweden.			
2	The number of tourists in North America grew faster than in Sweden.			
3	The Aurora is said to be the main reason for the rise in travellers going to Alaska.			
4	The polar lights are magnetic fields shot off from the Sun.			
5	The lights can be faster or slower.			
6	People who claim to hear the polar lights always tell the same story.			
7	In the past people thought of their ancestors when they saw the Aurora.			
8	Pictures of the Aurora are a modern phenomenon.			
9	Because many new hotels are being built, prices for rooms are falling.			
10	Travellers will need more time to see the Aurora in the future.			

TEXT 2 – Task 3

What I Learned by Living Without Artificial Light

By Linda Geddes

We spend a third of our lives either sleeping or trying to get to sleep. But in our 24/7 world, our biological clock has shifted by two hours and our sleeping pattern has changed significantly. (1) Imagine we didn't use electric light, what would happen? Could this improve our sleep or have other benefits?

Last winter, I decided to find out and took part in an experiment with two sleep researchers at the University of Surrey. (2) During the day, I would try to maximise exposure to natural light and after dark, I would switch off any artificial light. These two things were quite difficult as I had to juggle an office job and busy family life in urban Bristol. The experiment was designed for a total of five weeks. Week one, three and five would be experimental. (3) The weeks without experimental conditions were necessary to be able to compare the results.

In the first week, I would try to get more daylight by getting outside at lunchtime, exercising in the park and moving my desk next to the window. In the third week I would rely on candlelight instead of electric light after 6 p.m. In the fifth week, I would combine the two.

When I tried to get more daylight in the first week, I was surprised by the outcome: On a cloudless summer day, the light outdoors can reach 100,000 lux. On an overcast day, it can be as low as 1,000 lux. (4) Despite my best efforts, my average light exposure between 7:30 a.m. and 6 p.m. was 397 lux (first week) and 180 lux (third week) as I spent most of the day working indoors and the sun set at around 4 p.m. The reason why I got less lux was less sunshine in the third week. This was still an improvement on my weeks of normal life with an average of 128 lux. The third week's task of switching off evening light during December was even harder. Cooking by candlelight was a daily challenge. (5) That was when I realized how useful artificial light is.

As part of the experiment, samples of melatonin had to be taken – a hormone the body produces. (6) The more daylight a body gets, the more melatonin is produced, which makes people sleepy. Nighttime light, however, can suppress the production of melatonin and delay our desire to sleep. After some time in my

experiment, my sleeping pattern changed. (7) So I went to bed about half an hour earlier. For every 100 lux increase in my average daylight exposure, I got an extra 10 minutes of sleep. I also felt fitter upon waking.

Every morning and evening, I filled out a questionnaire to determine how I was feeling. The results suggested my morning mood was much more positive compared to when I was living my normal life. There was also a trend towards less negative feelings in the evening. (8) None of my cognitive test results achieved statistical significance, but there was a trend towards faster reaction speeds and slightly better performance in a memory test.

What can we learn from all of this? Spending more time outdoors during the daytime and dimming the lights in the evening really could be a recipe for better sleep and health. For millennia, humans lived in synchrony with the sun. Perhaps it's time we got reacquainted.

Adapted from: Geddes, Linda. What I Learned by Living Without Artificial Light [online available on: https://www.bbc.com] Smithe, Dana G. The Invention of the Light Bulb Fundamentally Changed our Biology [online available on: https://www.elemental.medium.com] Moyer, J.D. Sleep Experiment – A Month With No Artificial Light [online available on: https://www.jdmoyer.com]

TASK 3

Look at the text *What I Learned by Living Without Artificial Light* (pages 5 – 6). Six sentences have been removed from the text. Choose the correct gap (**1 – 8**) in the text for each of the sentences below (**A – F**).
Write the correct number of the gap behind each sentence.
Be careful: There are **two gaps** which you do **not need to use**. **6 P**

A That was because my body started to release melatonin 1.5 to 2 hours earlier, which made me a lot sleepier in the evenings. ☐

B In the centre of my office it was even less – only 120 lux. ☐

C Artificial light was the cause of this transition – first through gas lamps and then through the invention of Thomas Edison's incandescent bulb. ☐

D I didn't officially assess my mood at any other time of day, but I can say that I felt more enthusiastic when I spent more time outdoors. ☐

E In between I would lead my normal life. ☐

F Chopping vegetables in one of the darkest months of the year was an outright hazard. ☐

TASK 4

Verwenden Sie den folgenden Text und **bearbeiten Sie die Aufgaben (1 – 6) stichpunktartig auf Deutsch.**
Die Aspekte müssen **inhaltlich vollständig** erfasst sein. Einzelwörter genügen nicht als Antwort. **5 P**

Outdoor Lighting and Light Pollution: What You Need to Know

Your outdoor lighting may include your neighborhood streetlights, decorative lamps, and safety lights. Outdoor lighting makes us feel safer when night falls. It improves visibility and therefore increases the number of people who leave their homes at night. But almost every luxury comes at a price. Light pollution, unlike other forms of contamination or waste, remains largely overlooked. As a consequence, it is still unregulated in many countries.

The Effect on Humans
A hormone called melatonin helps regulate sleep, body temperature and appetite. Unfortunately, artificial light used when it's naturally dark outside troubles the normal rise and fall of melatonin. Therefore, human beings desperately need darkness to function at their best.

The Effect on Animals
Animals are even more exposed to light pollution through skyglow and light violation that stretches much further than the area we intend to light. Studies have shown that even slight changes in nighttime light levels can have severe consequences for night animals. They become disoriented as these changes keep them from using the moon and the stars as a compass.

Guidelines for sustainable lighting
When planning any outdoor lighting project, choose bulbs that emit less blue light as this kind of light easily scatters into the atmosphere. Use outdoor lamps with a cap attached above the light bulb that hinders light from shining directly into the sky. When installing motion sensors make sure your lamps switch off after a short time. Don't forget to adjust the sensitivity of your motion sensors to prevent the lights from turning on unnecessarily.

1 Beschreiben Sie die Vorteile der nächtlichen Außenbeleuchtung. **(2 Details)**

▶ _____

▶ _____

2 Nennen Sie den Unterschied zwischen Lichtverschmutzung und anderen Verschmutzungsarten.

_____

_____

3 Beschreiben Sie den Einfluss von künstlichem Licht auf den **Melatoninhaushalt.**

_____

4 Erläutern Sie die Folge von Lichtverschmutzung für nachtaktive Tiere. **(2 Details)**

▶ _____

▶ _____

5 Nennen Sie ein Kriterium für die Auswahl passender **Leuchtmittel.**

_____

6 Erklären Sie, was beim Anbringen von Bewegungsmeldern zu beachten ist. **(2 Details)**

▶ _____

▶ _____

Adapted from:
Bourland, Laura. Outdoor Lighting and Light Pollution: What You Need to Know [online available on: https://www.buildwithrise.com]
Dave / ProLampSales. How To Plan Outdoor Lighting … [online available on: https;//www.prolampsales.com]
DelMar. How Does Outdoor Lighting Cause Light Pollution? [online available on: https://www.delmarfans.com]

PART II: Use of English

TASK 1

Look at **text 1** (page 11). **Find a word or expression which means the same as each of the words (1 – 5) below**. The lines where you can find the words or expressions are indicated in brackets.
There is one example (0) at the beginning. **5 P**

0	rise	→	***increase***	paragraph A (l. 4 – 8)
1	(to) leave	→	_____	paragraph B (l. 9 – 15)
2	(to) produce	→	_____	paragraph D (l. 18 – 22)
3	supernatural	→	_____	paragraph E (l. 23 – 28)
4	care	→	_____	paragraph F (l. 30 – 32)
5	arrival	→	_____	paragraph F (l. 33 – 38)

TASK 2

Look at **text 1** (page 11). What do the following words mean? **Match** the expressions **(A – F) as used in the text** with their corresponding definitions **(0 – 7). Write the correct numbers in the grid below.**
Be careful: There are two definitions that you do not need.
One definition (0) has already been matched correctly. **5 P**

A **decade** (l. 6)
B manifestation (l. 9)
C flare (l. 11)
D shade (l. 17)
E assumption (l. 27)
F sanctuary (l. 33)

0 **a time span of ten years**
1 a place of religious meaning for people
2 darkness caused by blocking light
3 a theory that is accepted as true
4 an irregular blaze of flames
5 a place of refuge or safety
6 something that becomes clearly visible
7 a slightly different quality of something

A	B	C	D	E	F
0					

TASK 3

Use the word given in capitals at the end of some of the lines to **form a word of the same word family** that fits in the space in the same line. There is one example (0) at the beginning. **5 P**

0	Art ___viewed___ in its best light – In a small town in Bavaria, works of modern art like those of Andy Warhol and Georg Baselitz are presented in unglamorous	**VIEW**
1	_____ halls that have been converted into a daylight museum. The	**INDUSTRY**
2	window modules in the roof _____ optimal lighting conditions	**CREATIVE**
3	and fit seamlessly into the interior design. As lightbeams _____ from above, windows on the façade are not needed. This maximizes the wall area	**ENTRANCE**
4	for the presentation of the works of art. In contrast to the _____ practice in museums, the art is shown in the changing light of the day and the	**USE**
5	seasons; so the colours always _____ differently.	**APPEARANCE**

Adapted from: Velux. Public Buildings – Case Studies [online available on: https://commercial.velux.com]

TASK 4

Complete the second sentence so that it has a similar meaning to the first sentence, using the KEY WORD given in brackets. **Do not change the KEY WORD given.** You must use **between two and five words including the KEY WORD**. There is one example (0). **5 P**

0 Laser is an acronym standing for light amplification by stimulated emission of radiation.
(1) (2) (3) (4) (5) **(WHICH)**
Laser is **an acronym which stands for** light amplification by stimulated emission of radiation.

1 It was Einstein who first had the idea that stimulated light could produce a laser. **(TO)**
Einstein was _____ the idea that stimulated light could produce a laser.

2 Theodore Mainman built the first laser at Hughes Laboratories in California in 1960. **(BY)**
The _____ Theodore Mainman at Hughes Laboratories in California in 1960.

3 In the 1980s NASA missions started to use lasers to measure the distance between the Moon and the Earth. **(USED)**
Since the 1980s, NASA missions _____ _____ measure the distance between the Moon and the Earth.

4 Laser light consists of only one colour whereas other light contains a mixture of all the colours of light. **(INSTEAD)**
_____ a mixture of all the colours of light, laser light consists of only one colour.

5 Just like every other light, laser light travels at the speed of light, which is 299,792,458 metres per second. **(FAST)**
Travelling at the speed of light, which is 299,792,458 metres per second, laser light _____ _____ every other light.

Adapted from: NASA Science Space Place. What is a Laser? [online available on: https://spaceplace.nasa.gov]

TASK 5

Complete the following text. Use the correct forms of the words in brackets and find words of your own to replace the question marks. There is one example (0). **10 P**

Many researchers (0) ***through*** (???) the ages have taken up the challenge of finding out what light is. The basis of modern optics (1) _____ (lie) in ancient Greece. Since then, a lot of scholars (2) _____ (contribute) to the development of this field. In 1704, Isaac Newton (3) _____ (reveal) his light particle theory, which turned out to be incorrect. In the 19th century James Maxwell (4) _____ (theoretic) predicted the existence of electromagnetic waves. All these scholars are worth (5) _____ (honour) of course. However, if you asked people for a famous physicist, most of them (6) _____ (name) Albert Einstein. He published a paper in 1905 (7) _____ (???) content included the idea of light made up of particles called photons. The intensity of the light varies depending (8) _____ (???) the number of photons which have characteristics of waves and particles. Experts believe that if Einstein hadn't discovered the photon, debates over the nature of light would have gotten even (9) _____ (bad). Today the photon is seen as the key to the origins of space and life. We have come a long way, but we can only speculate how our understanding of light (10) _____ (perceive) decades or centuries from now.

Adapted from: Bellis, Mary. The History of Lighting and Lamps [online available on https://www.thoughtco.com] Matulka, Rebecca; Wood, Daniel. The History of the Light Bulb [online available on https://energy.gov]

PART III: Guided Writing

You only have to do **one** of the following two tasks.
Important: First read both tasks, then decide whether you want to do Task A or Task B.
You can write down your ideas on an extra sheet before you do the task on your exam paper.

TASK A

A **concert hall** in your town is looking for a **new member for the lighting team**.
You fancy an apprenticeship in this field.

Write a **letter of application** including …

- your reason(s) why this is your dream job
- your general work experience so far
- qualities you have that may be useful for this job
- details of the apprenticeship you would like to know more about

Write about 200 words.

TASK B

You are part of a **project group** in your town that focuses on **saving energy**.
In your article for the group's website you …

- explain how the group was founded
- describe what your group has achieved so far
- suggest what your town can do to save energy
- write how readers can support your group

Write about 200 words.

TEXT 1

Viewing the Polar Lights:
Heavenly Visual Music – But at What Cost?

On a clear January night in northern Sweden, a shimmering, alien-green ribbon unfurled across the sky. Here, on the shore of the frozen Torne River, I was lucky to experience one of nature's most intriguing sights: the Aurora Borealis, the northern lights.

A "It's become a must-do thing in life to see the northern lights," said Arne Bergh, the owner and creative director of the Icehotel in Kiruna, Sweden, which I stayed in. In Alaska, the number of winter visitors last year surpassed 320,000, an increase of 33 percent from a decade earlier, according to the Alaska Travel Industry Association, which credits most of that development to the northern lights.

B Before starting my own Aurora hunt in northern Sweden, I wanted to understand exactly what it was I was searching for in the dark arctic sky. "The Aurora is a manifestation of what we call space weather," Aurora researcher Dr Trond S. Trondsen explained to me the day before my flight departed from Stockholm for Kiruna. "As the Sun's magnetic field becomes stronger and weaker, it can become unstable. This results in solar flares and what's called a coronal mass ejection.Particles blow into space and some reach Earth. The Earth's magnetic field eventually draws the particles toward the North and South Poles, where they may get into the atmosphere."

C Dr Trondsen explained that, depending on whether the particles collide with oxygen or nitrogen atoms in our atmosphere, the colour of the polar lights can change entirely. "People are often amazed by all the various forms, speeds and colour shades the polar lights can come in."

D Apart from the visual component of the Aurora, there is also an audible one. The polar lights generate an infrasound, which can be measured with equipment but is inaudible to human ears. The interesting thing about this is that many people in almost the entire Auroral zone say they have heard the polar lights. Some say they come with a distant whistle, others would describe a crackle like sparks from a fire or a kind of whining. Unfortunately, though, I didn't experience anything like that when I saw the Aurora.

E Since the Aurora has such a mystic character, I wasn't surprised to find out that people in the past gave the polar lights a place in their traditional mythology, as Arne Bergh explained. "Indigenous cultures linked the Aurora with their dead. There are many stories how dangerous it can be not to show respect for the polar lights. Their oldest representations are a couple of cave paintings in Rouffignac in France, created by stone-age hunters who lived about 10,000 years ago. This leads to the assumption that the Aurora had the same meaning for them as it had later on for the Sámi people, the Inuit and the First Nations all the way until the 1900s," he explained in one of the cold and dark evenings I spent at his hotel along with guests from all over the world.

F Travelling to the Nordic regions, you really see that nature is often fragile. Providing tourism services must be done by exercising extreme caution. The opposite is the case, however. Every year, new hotels and cabins are constructed to accommodate growing numbers of visitors. Tourist flights emit thousands of tons of dioxides every season. The massive influx of travellers is leading to vast crowds, natural sanctuaries for plants and animals being damaged or littered with rubbish, wild animals being scared away or killed by traffic or hunting. The tourists are increasingly subjected to rising rates for accommodations, waiting lists on tours and large crowds at the viewing points. This raises the question: Is it still authentic to experience the polar lights? The kind of overtourism that the Aurora Borealis has produced seriously makes me wonder if what's happening here might do more damage than good.

Adapted from: Williams, Ingrid K. Viewing the Northern Lights … Heavenly Visual Music [online available on: https://www.nytimes.com] Carter, Jamie. It's Official: The Northern Lights … [online available on: https://www.forbes.com]