

Słuchanie		Czytanie		Zadania leksykalne i gramatyczne			Pisanie	Razem	Kody
1.1 (7)	1.2 (18)	2.1 (7)	2.2 (18)	3.1 (8)	3.2 (9)	3.3 (8)	4 (15)	(90)	Lektor 1
									Lektor 2

A

**Politechnika Warszawska**  
**Studium Języków Obcych**  
**Egzamin pisemny z języka angielskiego akademickiego**  
**Poziom C1**

**Nazwisko i imię** \_\_\_\_\_ **podpis** \_\_\_\_\_  
*(Full name in capital letters )* *(signature)*

**Nr indeksu** \_\_\_\_\_ **Wydział** \_\_\_\_\_ **Semestr** \_\_\_\_\_ **Data** 17.06.2015  
*(WUT ID number)* *(Faculty)* *(Semester)*

**1 Listening**

**1.1** You are going to hear two science lecturers discussing the space exploration. For questions **1-7**, choose from the answers **A, B** or **C**. Write your answers in the boxes. You will hear the recording **ONCE ONLY**. You now have **35 seconds** to read the questions. **(7 marks)**

**Questions 1-4** Choose the correct answer, A, B or C.

1. According to John, what is the main advantage of space exploration?

- A. To supply resources for use on Earth.
- B. To find out more about the origins of our planet.
- C. To establish a colony for humans if Earth becomes uninhabitable.

1.	
----	--

2. According to the speakers, why can't robots be sent into space instead of humans?

- A. They cannot operate for long enough.
- B. They are too expensive to build.
- C. They are too reliant on humans.

2.	
----	--

3. What are we told about the space technology currently used?

- A. It can be unreliable.
- B. It is based on old technology.
- C. It is becoming cheaper to produce.

3.	
----	--

4. What is the biggest problem in sending robots to Mars?

- A. the distance
- B. the atmosphere
- C. the extreme temperature

4.	
----	--

**Questions 5-7** Who expresses the following opinions?

- A. John
- B. Susan
- C. both John and Susan

5.	
----	--

5. We should plan a trip to Mars even though it may not happen soon.

6.	
----	--

6. The soil on Mars is highly toxic.

7.	
----	--

7. The soil on Mars contains materials we could use.

A

**1.2** You will hear part of a lecture about a watch for use in emergencies. For questions **8-16** write your answers in the boxes. You will hear the recording **ONCE ONLY**. You now have **45 seconds** to read the questions. **(18 marks)**

**Questions 8-12**

Answer the questions below. Write **NO MORE THAN THREE WORDS AND / OR A NUMBER** for each answer.

8. How much was the watch used by Fossett sold for? 8.

9. How long can the watch continue transmitting an emergency signal? 9.

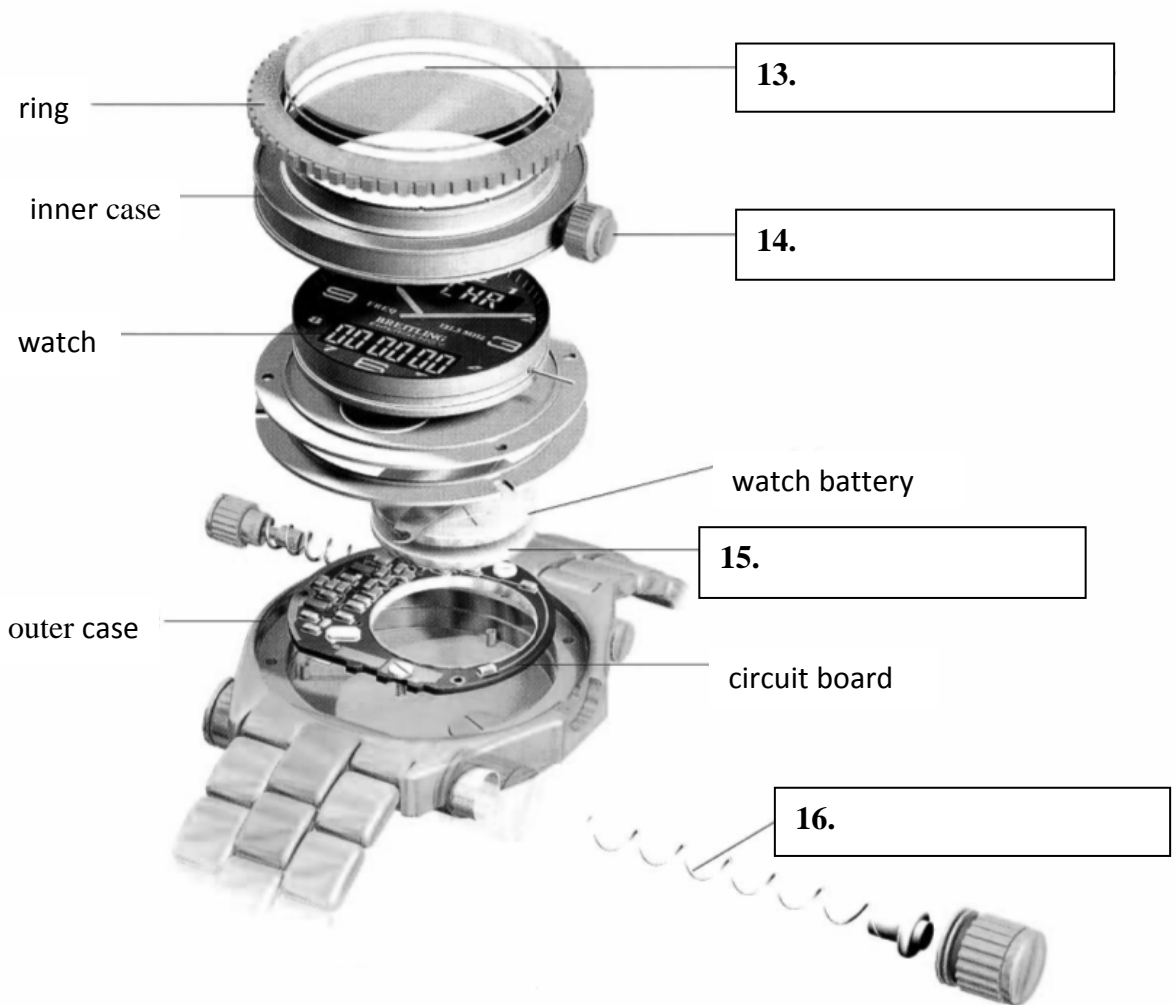
10. What is the maximum range of the watch at sea? 10.

11. How much does the watch weigh? 11.

12. When was the self-winding watch invented? 12.

**Questions 13-16**

Label parts of the watch. Write **NO MORE THAN THREE WORDS** for each answer.



**Reading**

**2.1** Read the text and then complete the tasks below.

**(7 marks)**

**Work experience and internship programs**

Through our student work experience program, the education authority provides over 9,000 work experience placements for young people each year. Our program is designed to offer employment opportunities for students that will enrich their academic studies and help them gain valuable work-related skills thereby improving their chances of finding a good job after graduation. A placement does not need to be related to a particular field of study and so participants may even discover areas of work they have never considered before.

All secondary and post-secondary school students in full-time education are eligible to apply for the program. Individual case managers will determine the minimum level of academic achievement required for each job. During an academic term, a student may work part-time. During the summer

holidays a student may work full-time or part-time. The education authority is responsible for the recruitment of all students under the work experience program. Applicants apply in person to our office and we refer candidates to the appropriate department.

Our internship program is designed specifically for post-secondary students, whether part-time or full-time. Students on the internship program are given an assignment related to their research area offering them the chance to use their academic knowledge in an actual work setting. The academic institution plays an important role in the placement of students under this program and they will determine the duration of a work assignment. These traditionally last four months but internship assignments may vary from 4 to 18 months. Students in this program normally work full-time.

**Questions 17-19**

Complete the sentence with the correct ending A-E. Write the correct letter, **A-E**, next to questions **17-19**.

**17.** You can apply for the work experience program

**18.** You can work on the student work experience program full-time

**19.** You can only join the internship program

- A.** if you have high academic results from your educational institution.
- B.** if you are a full-time student.
- C.** outside of normal term time.
- D.** when you have graduated from university.
- E.** if you have finished your secondary education.

<b>17.</b>	
<b>18.</b>	
<b>19.</b>	

**Questions 20-23**

Complete the summary below. Choose **NO MORE THAN TWO WORDS AND / OR A NUMBER** from the text for each answer.

To take part in the work experience program, first you need to apply to the **(20)** .... . Your **(21)** .... will tell you what qualifications you need. The internship program allows undergraduates to gain work experience in their **(22)** .... . The maximum length of an internship assignment is **(23)** .... .

<b>20.</b>	
<b>21.</b>	
<b>22.</b>	
<b>23.</b>	

## Tower of Strength

**A** Of all the stories of art influencing science, tensegrity is one of the most far-reaching. On one level, tensegrity is a system of creating architecture or sculptures involving rods in compression and wires in tension. It was invented by sculptor Kenneth Snelson at Black Mountain College, the hotbed of international modernism, in 1948. At the time, Snelson was taking part in a summer school with the engineer Buckminster Fuller, who pioneered the idea of applying geometric forms to architectural and engineering innovation.

**B** Using an abstract sculpture as a starting point, Snelson then added tension wires to the free-floating members. Fuller encouraged him and when they met up again in 1949, Snelson had perfected a concept in which stiff rods can be supported without touching by a network of wires. Although 'tensegrity' (from 'tensional integrity') was coined by Fuller, the idea was entirely Snelson's, and he went on to make many more tensegrity sculptures, the most famous of which is the sixty-foot high Needle Tower (1968), now at the Hirshhorn Museum and Sculpture Garden, Washington DC.

**C** Basic tensegrity structures can be made from three drinking straws, six paper clips, and nine rubber bands. When the structure is wired up, you can see that none of the rods actually touch: they're held in equilibrium by the rubber bands. Even this simplest model has very interesting properties. Although drinking straws are weak, with a tendency to buckle, the tension bands hold them in such a way that the compressive force is always directed straight down the tube and buckling doesn't happen. The first thing you notice if you make one is that it is immensely fiddly to assemble – pieces keep falling apart – but once the last band is secured, you can fling the object around, squash it, and it seems indestructible. The structure isn't symmetrical in its properties. In one direction, it squashes flat and bounces back. In the other direction, it resists the pressure. If you wanted to

create versatile 3D structures out of nothing much, tensegrity would take some beating.

**D** It is strange that architects and engineers didn't discover the principle before 1948, since the benefits of structures held in tension over traditional building techniques had been known since the invention of the suspension bridge in 1796. And the great maverick biologist D'Arcy Thompson in *On Growth and Form* (1917) had extensively analysed the principles of tension and compression both in nature and engineering. Kenneth Snelson believed that tensegrity was a pure art and that it would never be really useful architecturally. It took some time to prove him wrong, but in the 1980s, tensegrity architecture began to appear. The key protagonist was David Geiger and the first important structure was his Gymnastics Hall at the Korean Olympics in 1988.

**E** Five years later, its significance in quite a different field became apparent when scientists described the tensegrity model of cell structure, and this is where the principle is now making waves. What is it that prevents living things from collapsing to a blob of jelly on the floor? Unsurprisingly, it is likely to be tensegrity. For a long time, biologists ignored the mechanical properties of cells: they were just 'elastic bags' full of interesting chemicals. But there has to be an architecture: tissue is tough, resilient stuff that keeps its shape.

**F** The human body is certainly a tensegrity structure: it consists of 206 bones – tensegrity rods – that do not touch, held together by tendons and muscles. And the tension of living cells seems to be maintained by tensegrity structures within the cell: microfilaments play the role of the rubber bands and stiff microtubules are the rods. Donald Ingber, at the Harvard Medical School, researches how cells move and stick to each other, and he believes that tensegrity offers 'the most unified model of cell mechanics'. It explains some basic properties of cells very well.

**G** If cells are placed on a microscope slide, they flatten under gravity. When cells are surrounded by other cells, proteins called integrins attach one cell to another at specific locations. These act as tensegrity wires, pulling the cells taut in all directions. When the integrin network is disrupted, the cells sag. Whether or not the cell is a tensegrity structure is still controversial, but in a series of recent papers, Ingber and his team have been gradually picking off the objections with detailed studies of cell structure. For the lay observer, pictures of a cell showing triangular structures resembling a geodesic dome are highly suggestive of tensegrity.

**H** It has been a long road since Black Mountain College in 1948, but it all comes back to Kenneth Snelson and his sculpture. Once asked what he would save from a fire in his office, Donald Ingber replied: 'The tensegrity model made by Kenneth Snelson, a gift from the artist himself.'

**Questions 24-29**

The reading passage has eight paragraphs, **A-H**. Which paragraph contains the following information?  
 Note: you may use any letter more than once.

- 24. an error made by the inventor of tensegrity
- 25. the branch of science on which tensegrity is currently having the greatest impact
- 26. the writer's surprise that tensegrity remained unknown in engineering
- 27. an account of how a sculpture was made
- 28. an unresolved issue concerning the nature of individual cell structure
- 29. an explanation of why a basic tensegrity structure keeps its shape

<b>24</b>	
<b>25</b>	
<b>26</b>	
<b>27</b>	
<b>28</b>	
<b>29</b>	

**Questions 30-32**

Answer the questions with words from the reading passage. Write **NO MORE THAN THREE WORDS** for each answer.

30. Which parts of the tensegrity model prevent the straws losing their shape?

\_\_\_\_\_

31. Which parts of a cell hold its microtubules in place?

\_\_\_\_\_

32. What substances join cells to each other?

\_\_\_\_\_

### 3 Use of English

- 3.1** Complete the following text about a paperless office by writing the missing words in the spaces provided **33-40**. Use only one word in each space. The first answer has been given as an example **(0)**. **(8 marks)**

#### Paperless Office

The phrase 'paperless office' **(0)** .... coined way back in the 1970s, when commentators, buoyed by the exciting potential offered by technology, predicted that all record handling would be purely electronic by the 1990s.

But, as a typical picture of any desk demonstrates - we are still a long way **(33)** .... .

Partly that is down to cost - it is a whole lot cheaper to give employees a piece of paper than an electronic device - and the cloud storage that many companies are adopting can also have high costs.

But on a more visceral level, there is something quite comforting about paper.

"When the act of writing takes on a personal dimension, that's when paper and handwriting is superior **(34)** .... typing on a keypad," said Arrigo Berni, chief executive of Italian notebook maker Moleskine.

Smart notebooks offer to bridge the physical and digital worlds **(35)** .... part of an increasing move to eliminate the waste and confusion that piles of paper creates.

People are far **(36)** .... likely to read newspapers on trains when scrolling through a tablet is so much easier.

And our paperless journey does not end there.

Look **(37)** .... you on your next commuter journey and far **(38)** .... people are negotiating unwieldy newspapers - opting instead to read their news via a smartphone or tablet.

Get off the train and the sea of commuters are much more **(39)** .... to flow through the barriers with the swipe of a smartcard or credit card, while paper tickets are becoming a rarity at airports too.

Even our interactions with **(40)** .... government are taking a decidedly digital turn, with the UK government scrapping the paper car tax disc and people now routinely filling in tax returns electronically.

<b>0</b>	<i>was</i>
----------	------------

<b>35</b>	
-----------	--

<b>38</b>	
-----------	--

<b>33</b>	
-----------	--

<b>36</b>	
-----------	--

<b>39</b>	
-----------	--

<b>34</b>	
-----------	--

<b>37</b>	
-----------	--

<b>40</b>	
-----------	--

**3.2** For questions **41-49** read the text below. Use the **words in brackets** to form words that fit in the gaps. There is an example at the beginning **(0)**. **(9 marks)**

### Europe versus Google

Google it today and you'll see that the **(0) ... (Europe)** Commission has turned up the heat in its long-running probe into anti-competitive behaviour by the web's most popular search engine. EC competition chief, Margrethe Vestager, issued formal **(41) ... (object)** alleging that Google abuses its **(42) ... (dominate)** position in the market of "general internet search". In particular, the EC claims that Google artificially boosts its own products in returning Google **(43) ... (compare)** shopping results in its service "Google Shopping", even if those products aren't the best or cheapest – the "most relevant", as the Commission puts it – for consumers.

Since taking office in November 2014, Vestager has made the Google **(44) ... (inquire)** a top priority, signalling a **(45) ... (will)** to consider court battles and hefty fines if Google and other digital giants don't fall into line with European **(46) ... (compete)** law. In this, she has displayed a distinct shift from her predecessor, Joaquín Almunia, whose multiple attempts to achieve private **(47) ... (settle)** with Google fell apart a year ago, before descending into a political and economic boxing match.

Vestager's **(48) ... (announce)** comes amidst increasing restlessness by European policymakers that "something must be done" about Google. Identifying with precision the source of that **(49) ... (anxious)**, and the appropriate focus of action, is rather more challenging. And it forces us to ask: what does the artillery of competition law offer? And is it gunning for the right target?

<b>0</b>	<i>European</i>
<b>41.</b>	
<b>42.</b>	
<b>43.</b>	
<b>44.</b>	
<b>45.</b>	
<b>46.</b>	
<b>47.</b>	
<b>48.</b>	
<b>49.</b>	

**3.3** Rewrite the following sentences using the words given so that they have a similar meaning. You must use between **3 and 6** words including the word given. Write the missing words in the boxes provided. You must not change the word given. There is an example at the beginning **(0)**. **(8 marks)**

**0.** Your house needs to be cleaned.

**have**

You ..... cleaned.

*need to have your house*

**50.** Anna was interested in Afro-American issues in her University years.

**had**

Anna ..... Afro-American issues in her University years.

**51.** The expertise has considered geo-political factors with relation to the Middle-East crisis.

**consideration**

Geo-political factors ..... in the expertise with relation to the Middle-East crisis.

**52.** By booking in advance, participants can get a 20% discount.

**entitled**

Participants who ..... a 20% discount.

**53.** There is not much chance of our receiving a grant for this project.

**little**

We ..... receiving a grant for this project.

#### **4 Writing (15 marks)**

Choose **one** of the tasks and write **200-250** words:

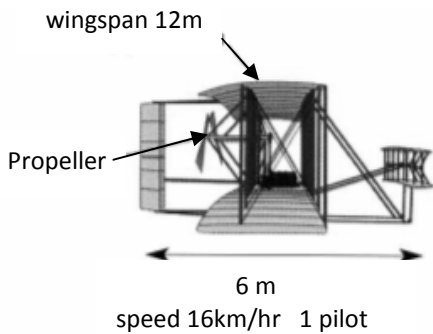
##### **1. Essay**

Technology is making communication easier in today's world, but at the expense of personal contact as many people choose to work at home in front of a computer screen. What dangers are there for a society which depends on computer screens rather than face-to-face contact for its main means of communication?

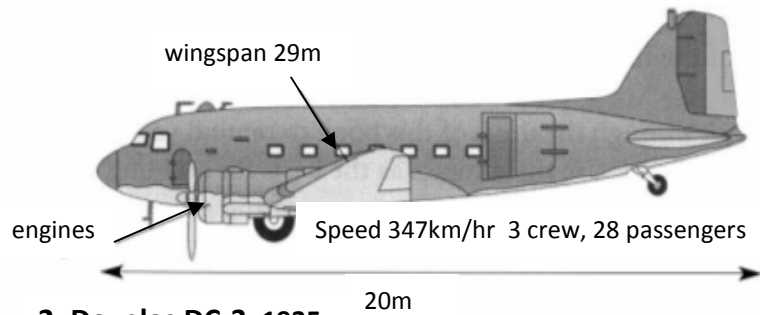


## 2. Diagram description

The diagrams below show stages in the development of the aeroplane since the first powered flight in 1903. Summarise the information by selecting and reporting the main features, and make comparisons where relevant.



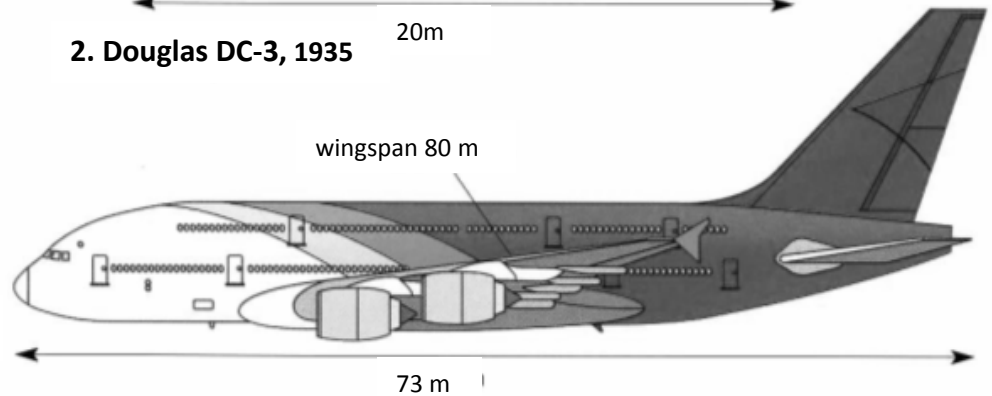
**1. Wright Flyer, 1903**



**2. Douglas DC-3, 1935**

speed 1050 km/hr,  
555 passengers

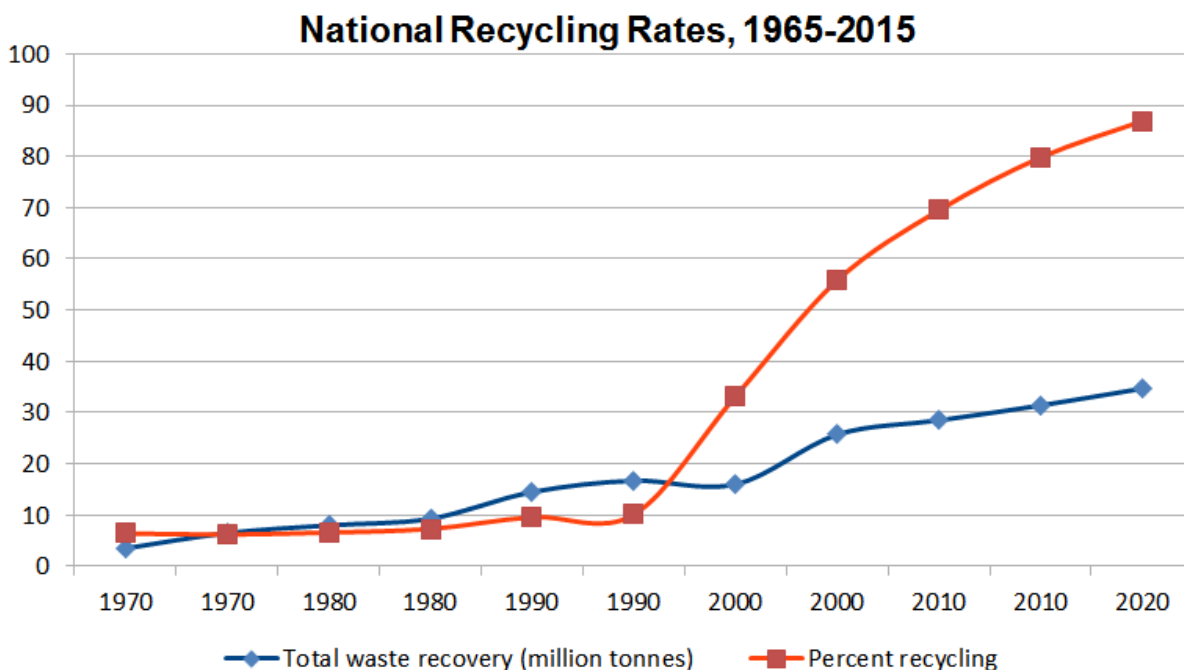
**3. Airbus A380, 2004**



## 3. Graph description

The graph below shows waste recycling rates in the U.S. from 1965 to 2015.

Summarise the information by selecting and reporting the main features, and make comparisons where relevant.



**Task No .....**

..... 10

..... 20

..... 30

..... 40

..... 50

..... 60

..... 70

..... 80

..... 90

..... 100

..... 110

..... 120

..... 130

..... 140

..... 150

..... 160

..... 170

..... 180

..... 190

..... 200

..... 210

..... 220

..... 230

..... 240

..... 250

.....

.....

.....

.....

**T .../4**  
**O .../3**  
**A .../4**  
**R .../4**  
  
S1 .../15

**How many words have you written? \_\_\_\_\_ words**

*The detailed sources of all materials are specified in the answer key*

**T .../4**  
**O .../3**  
**A .../4**  
**R .../4**  
  
S2 .../15

*DRAFT SHEET*