

Listening

Time: 15 minutes

Task 1

Listen to an extract from the radio programme “Science Today” and complete the summary using one word in each space. You will hear the text *only once*.

The original idea for putting a bicycle on 1 rails so that it could run more 2 smoothly appeared in the 1800s. The idea was updated by a company called Shweeb for an 3 amusement park. 4 Google have now invested money to develop it into an urban transport system. Drivers sit in 5 pods hanging from a monorail, and 6 pedal while almost lying down. They travel 7 above the traffic. It is a solution with many advantages: it is green, convenient, cheap and 8 fun.

Development of the system for an urban environment. Like the original bicycle **railway**, the Shweeb system is meant to reduce friction between the wheel and the surface it makes contact with ‘by running hard wheels on hard rail’, just like a train. In the late nineteenth century, someone had the bright idea of mounting a bicycle-like contraption on rails. The idea was to give a **smoother** ride than could be achieved on conventional bicycles. At the time, no one recognised that a breakthrough had been made but, more recently, the idea of a pedal-powered monorail has been revived and updated at an **amusement** park in New Zealand by a company named Shweeb.

Google, always good at spotting a trend, has invested \$1 million to support further. But the Shweeb concept also takes the idea one stage further. **Drivers lie back in bullet-shaped hanging ‘pods’** and **pedal** with their feet forward, as on a reclining bicycle. The pods **hang from 20-centimetre-wide rails** constructed **above** street-level pedestrians and traffic.

There’s no need to worry about overtaking because two Shweebs travelling in a line are more efficient owing to reduced air resistance.

And is there a real demand for this? Well, both Google and Shweeb are convinced that it fills an important need for transport which is green, convenient, cost-competitive and **fun**. You could say they’ve reinvented the wheel!

Task 2

You will hear a story about a famous inventor. For questions 9-15 choose the correct answer. You will hear the text twice.

- 9 What does the speaker suggest about the name 'Moog'?
- A. It was one reason for the success of his invention.
 - B. It has an interesting sound.
 - C. Some people do not pronounce it correctly.
- 10 When Walter Carlos recorded with a Moog synthesizer,
- A. there was a big contrast in reactions to his recording.
 - B. people said that the instrument was more suited to popular music.
 - C. he did so in order to shock certain people.
- 11 What does the speaker say about Leon Theremin's invention?
- A. Theremin was disappointed by its lack of popularity.
 - B. Moog improved the design of it.
 - C. It was played without being touched.
- 12 What does the speaker say about Moog's synthesizer?
- A. It was used in a way he had not intended.
 - B. It benefited from a certain development in popular music.
 - C. It was more popular than the saxophone for a time.
- 13 Why did Moog sell his company in the 1970s?
- A. Demand for synthesizers in general was falling.
 - B. Competition from another company was causing it to fail.
 - C. He lost interest in running it.
- 14 What happened in the 1990s and early years of the new millennium?
- A. Young musicians asked Moog to design instruments for them.
 - B. Musicians started playing old Moog synthesizers.
 - C. Moog synthesizers were modernized by other people.
- 15 The speaker says that by the time Moog died,
- A. His new company was more successful than his old company.
 - B. His attitude to business had changed.
 - C. He was allowed to use his name on instruments he invented.

READING

Time: 30 minutes

Text 1

Read an article about the invention of earmuffs. Choose from the list A-H the sentence which best suits each gap (1-7). There is one extra sentence which you do not need to use. (Mind your grammar and translation here)

EARMUFFS

1 **D** Maine native and lifelong inventor Chester Greenwood helped to alleviate one of the most persistent of discomforts associated with brutal winter weather with his invention of earmuffs in 1873.

Born in Farmington, Maine on December 8, 1858, Greenwood was one of six children and was raised on his family's farm. 2 **C** When he was just 15 years old, the enterprising youngster grew tired of trying to warm his ears while outside by wrapping a bulky, itchy wool scarf around his head. An idea began to form in his mind for a better solution to this problem.

Upon his return home from a particularly cold day of ice skating one December afternoon, he shaped two pieces of thin, flexible wire called "farm wire" into ear-shaped loops. Then, he asked his grandmother to sew beaver fur onto the loops, fashioning simple ear covers that could be placed over his ears for warmth. This first version seemed to work, but it needed improvements. Greenwood added a steel band to connect the two loops that would hold them in place. 3 **E** For this design, he was awarded U.S. patent No. 188,292 on March 13, 1877. He was just 18 years old.

Before Greenwood's patent was granted, he had already begun testing various versions of his ear muffers around town. It wasn't long before local men, women, and children began latching onto the idea and trying to make their own pairs of earmuffs at home. 4 **G** He established Greenwood's Ear Protector Factory in Farmington to mass produce "Greenwood's Champion Ear Protectors."

Farmington became known as the Earmuff Capital of the World after Greenwood's business took off, especially when he began supplying earmuffs to U.S. soldiers during World War I. 5 **B** By 1883, his factory was producing 30,000 pairs of earmuffs per year. By 1936, annual output exceeded 400,000 pairs.

Greenwood, meanwhile, continued to innovate, acquiring more than 100 patents over the course of his lifetime, including U.S. patent No. 2,066,036 (issued in 1936) for the invention of the steel-tooth rake. He is also credited with the invention of the wide-bottom kettle, a folding bed, a decoy mouse trap, a donut hook, and a shock absorber design that led to components in airplane landing gear that are still used to this day. 6 **F**.

In 1937, Greenwood passed away at the age of 79. The Smithsonian Institution later called him one of the most outstanding American inventors of the 20th century. In 1977, the government of Maine declared December 21 "Chester Greenwood Day." 7 **A**.

- A. A parade is held there every year in honor of his achievements.
- B. The original ear muffler design was modified several times, adding an adjustability feature and small hinges that allowed the earmuffs to be folded and carried in pockets.
- C. He was educated only through grammar school, but he worked hard from an early age, helping to make ends meet by selling eggs door-to-door and making and peddling candy and other sweets.
- D. To grow up in Maine is to know cold weather.
- E. He also covered the inside of the mufflers with black velvet for comfort.
- F. He also owned a bicycle business and helped to launch the first telephone system in Farmington.
- G. Greenwood's idea had quickly become popular enough that he knew it was something worthy of a manufacturing business.
- H. He built these hearing protectors, providing jobs for residents of the Farmington area for nearly 60 years.

Text 2

For questions 8-15, read the text below and choose the best answer (A, B, C or D)

Canadian researchers have discovered a set of genes that **determine** the lifespan of the common nematode. This finding **sheds new life on** the aging process that may allow science to eventually delay the **inexorable** process of aging.

By **manipulating** the newly discovered genes, the team of McGill University in Montreal was able to increase the lifespan of the nematode fivefold. Altering the genes apparently caused the metabolism of the worms to operate at a **more leisurely** pace. This caused the DNA effects thought to bring about aging to accumulate at a reduced rate. Of course, the causes of aging in humans are more **involved** than those in nematodes. However, researchers are confident that these discoveries will provide invaluable **clues** about this **hitherto** mysterious process.

8 The word **determine** in the text is closest in meaning to

- A control**
- B maintain
- C shorten

D explain

Canadian researchers have discovered a set of genes that **determine** the lifespan of the common nematode (гены «контролируют»).

9 Which of the following is closest in meaning to the phrase **sheds new life on** in the text?

A contradicts what is known about

B emphasizes the importance of

C provides more information about

D calls more attention to

«проливают свет на»

10 The word **inexorable** in the text is closest in meaning to

A cruel

B essential

C unstoppable

D incomprehensible

«Неотвратимый, непрерывный процесс старения»

11 What is meant by the word **manipulating** in the text?

A discovering

B understanding

C modifying

D destroying

«изменение / преобразование недавно открытых генов»

12 The phrase **more leisurely** in the text is closest in meaning to

A slower

B more predictable

C more efficient

D harder

«более медленный ритм»

13 The word **involved** in the text is closest in meaning to

A serious

B well known

C easily observed

D complicated

«причины старения у людей гораздо более сложные»

14 Which of the following is closest in meaning to the word **clues** in the text?

A plans

B hints

C secrets

D discoveries

«бесценные зацепки»

15 The word **hitherto** in the text is closest in meaning to

A universally

B almost

C previously

D somewhat

«процесс, загадочный до этого момента»

Use of English

Time: 30 minutes

Task 1

Complete the paragraphs with suitable prepositions (one or two words). Use one preposition for each paragraph, once in every sentence. Put down these preposition phrases (there are to be 12 of them). The 0 paragraph has been done as an example.

0 India is *on* track to surpass China as the most populated country by 2035. In India, 48,000 babies are born every day *on* average. In future, India's resources such as schools and hospitals will be permanently *on* trial as they try to keep up with rising demands.

1 Millions of children are **at** risk of contracting diseases from dirty water. Only sixty percent of the world's population has easy access to drinking water **at** present. In the future, it is hoped that **at** least ninety-five percent of people will have running water at home, but there are no guarantees of this.

2 As humanity's need for resources and industries has grown, it has become clear that man is **by** far the most destructive animal on Earth. We are, **by** nature, extraordinarily prolific polluters of the planet. In future, everyone will have to monitor their pollution **by** law.

3 While the number of humans has risen, the number of wild animals such as lions and buffalo has been **in** decline for decades. We are now preserving the genetic codes of animals that are **in** danger of extinction. In future, we hope to be able to, **in** effect, 'recreate' these animals.

4 In the early twenty-first century, corruption in business has started getting **out of** control. Corporations have tried to keep a number of scandals **out of** sight. In future, **out of** necessity, stricter anti-corruption laws will be passed.

Task 2 Choose the correct options to complete the text

(See the contextual meaning of the words and sphere of usage in the dictionary)

Three predictions about travel in the next fifty years

The 5___ are that the rising cost of oil will make air travel all but obsolete except for the super-rich. Current figures 6___ to the fact that prices may reach €10,000 for just a short trip abroad, and the days of zooming across Europe for the price of a coach ticket will be nothing but a distant memory. ‘Staycations’ and virtual tours of exotic places will replace vacations, putting a serious dent in the tourist industry.

Cars will downsize. Those gas-guzzling monsters that fill the roads today will soon become a 7___ of the past. Law-makers are 8___ to intervene in favour of eco-friendly cars, while people will believe ‘smaller is better’ as parking spaces fail to grow in proportion to the population. The development of intelligent cars will 9___pace so that, by 2030, they will drive themselves.

The big boom area will be trains. Following the 10___ in usable bio-fuel, small, compact trains will be everywhere, regularly filling up at bio-fuel stations. The train is also 11___ to be silent. Acoustic technicians may 12___ have come up with sound-neutralising frequency waves that mute the carriage. The 13___ of being deafened by engines and mobile phone conversations will be over.

5 a) opportunities

b) truths

c) signs

6 a) point

b) signal

c) target

7 a) moment

b) thing

c) memorial

8 a) for

b) bound

c) definite

9 a) gain

b) get

c) gather

10 a) explosion

b) growing

c) popularity

11 a) ready

b) likely

c) thought

12 a) right

b) well

c) but

13 a) days

b) day

c) time

Task 3

For questions 14-20, read the text below and look carefully at each line. Some of the lines are correct, and some have a word which should not be there. If a line is correct, put a tick (✓). If a line has a word which should not be there, write the word in the answer box provided

14 The technology has had a major impact on many fields. Nowadays we can't
___ **the** (*Technology an abstract noun*) _____

15 suppose business, communication, or traveling without computers. I want
___ **correct** _____ 16 to discuss about the impact of computers on education. Modern
___ **about** (*discuss sth*) _____

17 technology has made life easy for students: it is possible to access to any
___ **to** (*access sth*) _____

18 library to make research. Computers give students an opportunity
___ **correct** _____

19 to gather an information about various topics from the Internet. It is
___ **an** ("*information*" is an uncountable noun so we can't use indefinite articles
with it) _____

20 one of the most easiest ways of making research for students.
___ **most** _____ (*the mistake in forming the superlative degree of adjectives*).

WRITING

Time: 40 minutes

Use the notes to write a description of this product. Remember to use a heading, subheadings, bullet points and appropriate punctuation. (See the methodological recommendations)



Programmed and changeable logo.

Made in India

A fair trade product (manufacturer gets fair share of profits).

Completely washable.

Price: \$30

Small digital screen with up to 28 characters.

Changeable background colour.

Programmed from your computer.

Write 140 – 180 words.