

## PART ONE: LISTENING COMPREHENSION (20 POINTS)

**I. You will hear Mr Farmer, a company manager, talking on the telephone to someone from an IT company. You will hear the recording twice. Read sentences 1-10, listen to the recording, and circle the correct letter (T) if they are true, (F) if they are false or (NI) if the information is not given in the recording. (10 points)**

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|---|------------|
| 1. Within six months, his company is going to approximately double the number of employees.                                       | T / F / NI |
| 2. His company needs a new IT system because the printers are slow and old.   | T / F / NI |
| 3. His main requirement is that the computer network must not break down.   | T / F / NI |
| 4. His company counts the time employees spend at work by using an electronic diary.  | T / F / NI |
| 5. The IT consultant confirms that very few companies have similar problems nowadays.   | T / F / NI |
| 6. Mr Farmer is unhappy with the company which provided the computer system he has now because of their poor after-sales service. | T / F / NI |
| 7. The IT consultant says that they do their best to keep clients with them for years.  | T / F / NI |
| 8. Mr Farmer has called this particular company because he found them on the Internet.  | T / F / NI |
| 9. Mr Farmer thinks companies should regularly upgrade their computer systems.  | T / F / NI |
| 10. The IT company usually agrees on the installation cost over the phone within 24 hours.  | T / F / NI |

*(Adapted from: Evans, V., FC Listening and Speaking Skills, 2008, test 2, part 4, Express Publishing, p. 14)*

**II. You will hear part of a radio program about the history of cooking. You will hear the recordings twice. Read sentences 1-10, listen to the recordings and complete the sentences below. Write NO MORE THAN TWO WORDS for each answer. Transfer your answers to the column on the right. (10 points)**

1. About \_\_\_\_\_ per cent of a chimpanzee diet is fruit.
2. A chimpanzee diet is difficult to digest and has a \_\_\_\_\_ taste.
3. Humans can't survive for long on fruit because they have a small \_\_\_\_\_.
4. Before they discovered cooking, people spent almost as much time eating food as they did \_\_\_\_\_.
5. One benefit of cooking was that it helped to \_\_\_\_\_ food.
6. Some scientists think cooking resulted in an increase in the size of the \_\_\_\_\_.
7. The idea of sharing a \_\_\_\_\_ probably started when people began to cook.
8. Waiting until food was cooked meant there was a risk that it could be \_\_\_\_\_.
9. New evidence shows that early humans used fire for cooking over one million years ago in \_\_\_\_\_.
10. The earliest evidence of cooking in Europe dates back to the \_\_\_\_\_.

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*(Adapted from: Evans, V., FC Listening and Speaking Skills part 1, 2008, Express Publishing, p. 24)*

## PART TWO: READING COMPREHENSION (20 POINTS)

### I. GENERAL READING (10 points)

A. For questions 1-5, circle the most appropriate option according to the text below.

1. The text below is about
  - a) the development of space exploration.
  - b) the abundance of human-made objects in space.
  - c) the surface of the Moon.
  
2. The event of March 4, 2022, was unique because
  - a) it took place on the invisible part of the Moon.
  - b) it was deliberate/planned.
  - c) it was unplanned but able to be tracked.
  
3. The crater created by the Chinese rocket booster was
  - a) comparable to several other Moon craters.
  - b) immediately observable.
  - c) too small to be noticed by other Chinese equipment.
  
4. As a result of some crashes that occurred on the Moon's surface,
  - a) the Moon is populated with live tardigrades.
  - b) some knowledge was gained about the layers below the Moon's surface.
  - c) a number of measuring instruments were placed on the Moon.
  
5. The reason why debris circulating in space is dangerous
  - a) is that it may change the surface of the Moon.
  - b) is that it makes the work of astronomers difficult.
  - c) is not given explicitly in the text.

B. For statements 6-10, decide whether they are true (T), false (F) or the information is not given in the text (NI).

- |   |            |
|---|------------|
| 6. Approximately 17 human-made objects crashed on the Moon unseen prior to March 4, 2022.       | T / F / NI |
| 7. The space age has lasted for 50 years.   | T / F / NI |
| 8. The Earth's orbit has a radius equal to 22,000 miles.  | T / F / NI |
| 9. The light in space, combined with the distance, is an obstacle in tracking space junk.       | T / F / NI |
| 10. It follows from the text that existing regulations regarding space debris are insufficient. | T / F / NI |

## Space junk on collision course with the Moon

In an unprecedented display of cosmic littering, on March 4, 2022, a used rocket part crashed into the far side of the Moon, marking the first time that a piece of space junk has been reliably known to accidentally strike the lunar surface. The part, a spent rocket booster, believed to be a fragment of the Chinese Chang'e 5-T1 mission which swung around the Moon in 2014, slammed into the Hertzsprung crater at 12.25pm GMT. Travelling at more than 2.5km per second, the four tonne rocket body hit the surface at a shallow angle, scattering debris and creating a crater of its own. The crater was expected to reach 20 to 30 meters across.

Astronomers did not get to see the impact directly, but they hope that images of the crash site can be taken soon by Nasa's lunar reconnaissance orbiter or India's Chandrayaan-2 spacecraft, both of which are circling the Moon. China's Chang'e 4 lander, which reached the far side of the Moon in 2019, was too far away to witness the spectacle.

The natural impact of meteorites has left the Moon marked with half a billion craters the same size or larger than the one the rocket booster probably made. But the lunar surface also bears the scars of rocket parts that were crashed intentionally, and of Moon missions that disintegrated on impact rather than settled on it. During the Apollo era, for example, huge Saturn V rocket bodies were steered into the lunar surface so that instruments placed on the Moon's surface could monitor the resulting shock waves for analysis of the Moon's interior. And in 2019, the Israeli Beresheet probe crash-landed on the Moon, scattering around thousands of tiny living creatures called tardigrades, known for their ability to withstand extreme temperatures and the exposure to the radiation and vacuum of space. There are slim chances, though, that the tardigrades survived the crash.

Experts estimate that, over the course of the space age, 50 or so objects have been launched into orbits that could have led to a collision with the Moon. But because tracking data is next to none, their individual fates are not known. A fraction of them have likely smashed into the Moon and escaped human notice, another fraction were pushed into orbits around the Sun, and a third fraction are still in their evolving orbits or have burned up in the Earth's atmosphere.

Availability of tracking data depends on the distance of an object from the Earth. A number of organizations, including the U.S. military, use radar to track objects in the Earth's orbit, from the satellites that hover just above the atmosphere to those more than 22,000 miles up. Currently, the US tracks more than 27,000 pieces of orbital debris. However, almost no one tracks space debris once it leaves the Earth's orbit. One reason is that objects making up space debris are small, and the brightness of the Moon and the Sun makes them difficult to find once they are too far away. And when these things turn up in asteroid surveys, it is usually to the disappointment of astronomers who were hoping for newly discovered worlds.

A number of experts say that needs to change. There are calls for better regulations for proper disposal of space junk, such as requiring rocket stages to perform end-of-life maneuvers that send them into solar orbits rather than leave them tumbling between the Moon and the Earth.

In the meantime, to quote David Rothery, professor of planetary geosciences at the Open University, "One more crater on the Moon is nothing to be upset about".

*[Adapted from : <https://www.theguardian.com/science/2022/mar/03/space-junk-about-to-crash-into-far-side-of-moon> and <https://www.nationalgeographic.com/science/article/a-rogue-rocket-part-is-about-to-collide-with-the-moon> Accessed: April 23,2022]*

**II. READING – ESP – AUTOMATYKA I ROBOTYKA (10 points)**

**Read the text and complete task A and task B.**

**A. Choose a sentence / clause (a - f) which best fits each gap (1-5). There is one extra option which cannot be used. Place appropriate letters in the gaps in the text. (5 points)**

- a. The driving force behind this motion is so strong that the robot can climb up a 20° incline or even carry a load 40 times its own weight.
- b. The videos also show how its behaviour changes based on its surroundings.
- c. Feng claims that they found many interesting driving phenomena besides deformation.
- d. This type of material has been known to scientists for ages.
- e. However, when the obstacle is too high, it will turn back.
- f. Then the surface beneath it is heated.

**Tube-shaped robots roll up stairs, carry carts, and race one another**

Researchers have designed a 4D-printed soft robot that self-assembles when heated and can take on challenging tasks like rolling uphill and navigating a bumpy and unpredictable landscape. "Like an insect with antennae, the robot can surmount a small obstacle," says senior author Wei Feng, a materials scientist at Tianjin University in China.

(1) \_\_\_\_\_ "The whole process is spontaneous without human interference or control."

The robot starts off as a flat, rectangular sheet of a 3D-printed liquid crystal elastomer, a type of stretchy plastic material. (2) \_\_\_\_\_ Subsequently, the robot spontaneously twists up to form a tubule resembling a spring. The change in shape under external stimulation adds time as a fourth dimension to the printing process, making it 4D. Once the robot forms a tubule, the contact from the hot surface induces a strain in the material, which causes it to roll in one direction. (3) \_\_\_\_\_ The length of the robot affects its velocity, with longer robots rolling faster than their shorter counterparts.

The researchers captured videos showing off the robot's skills, including a race between differently sized robots and another robot carrying a cart. (4) \_\_\_\_\_ We can see the robot either climbing up a step or changing directions when encountering an insurmountable obstacle. Those short videos clearly present the potential versatile use and application of the tube-shaped robots.

For Feng, the behaviour of the robot came as a surprise. "We processed the liquid crystal elastomers into samples of various shapes through 4D printing and stimulated these samples with light, heat, and electricity to observe their response," he says. (5) \_\_\_\_\_ In the future, these soft robots may be used to perform work in small, confined places like in a pipe or under extreme conditions like a 200° surface. "We hope that soft robots will no longer be limited to simple actuators, which can only change shape in a fixed position," says Feng.

*(adapted from: <https://www.sceincedaily.com/releases/2021/09/210922121823.htm>; retrieved: December 20, 2021)*

**B. For questions 6 - 10 find the words in the text that correspond to the definitions. (5 points)**

- 6. overcome a difficulty or an obstacle (par.1) .....
- 7. slightly elastic, capable of being bent (par.2) .....
- 8. the speed at which an object is travelling (par.2) .....
- 9. able to be used for many different purposes (par.3) .....
- 10. enclosed or restricted, limited (par.4) .....

## PART THREE: VOCABULARY AND GRAMMAR (20 POINTS)

I. For questions 1-5, complete the second sentence so that it has a similar meaning to the first sentence. Use the words written in bold. Write between two and five words in each case. Use words from the original sentence wherever possible. (5 points)

- Households cancel streaming services to cut costs. **ARE**  
Streaming ..... to cut costs .
- Unless he apologises for his recent misbehaviour , he'll get punished. **APOLOGISE**  
If ..... for his recent misbehavior, he'll get punished .
- It wasn't necessary for her to ask my permission to leave. **HAVE**  
She ..... ask my permission to leave.
- Iga plays tennis very well. **GOOD**  
Iga ..... tennis player.
- 'Would you like me to help you with the laundry?' **SHALL**  
'..... with the laundry?'

II. For questions 1-5, circle the correct answer: a, b, c, or d. (5 points)

- A 477-mile-long lightning bolt, ..... crossed three southern US states in 2020, is now verified by the World Meteorological Organization to be world-record breaking.  
a) which                      b) that                      c) when                      d) -----
- ..... a recent IPCC report, at up to 1.5C of warming, only 10 to 30% of coral reefs are expected to survive .  
a) Due to                      b) According to                      c) Because of                      d) In spite
- Why ..... me you decided to skip my wedding?  
a) you told                      b) didn't you tell                      c) you didn't tell                      d) you did tell
- The global lockdown in 2020 revealed how quickly and easily the problem of noise pollution ..... be solved.  
a) was                      b) has to                      c) must                      d) could
- The experiment ..... under strict medical supervision.  
a) we carried out                      b) was carrying out                      c) was carried out                      d) carried out

**III. ESP – VOCABULARY – AUTOMATYKA I ROBOTYKA (10 points)**

Match each term in column A with an appropriate definition from column B. There are three options in column B that cannot be matched. Write your answers in the table below.

- | <b>A</b>            | <b>B</b>   |
|---------------------|--|
| 1. maintenance      | A. the overall shape of something and the positions of different parts relative to one another |
| 2. flawed           | B. a thin layer or covering of something   |
| 3. peak demand      | C. a non-mechanical fixing   |
| 4. nut              | D. rocks from which metals can be extracted  |
| 5. layout           | E. a device or an action that sets off a reaction  |
| 6. energy-intensive | F. the process of preserving operational condition of equipment                                |
| 7. coating          | G. a cutaway view of an object   |
| 8. ore              | H. using a lot of power  |
| 9. cross-section    | I. a power mechanism used to effect motion or maintain the position of a robot                 |
| 10. trigger         | J. having or characterized by a fundamental weakness or imperfection.                          |
|                     | K. maximum power requirement at a given time   |
|                     | L. a mechanical fixing   |
|                     | M. the approximate cost or price of something  |

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## PART FOUR: WRITING (20 POINTS)

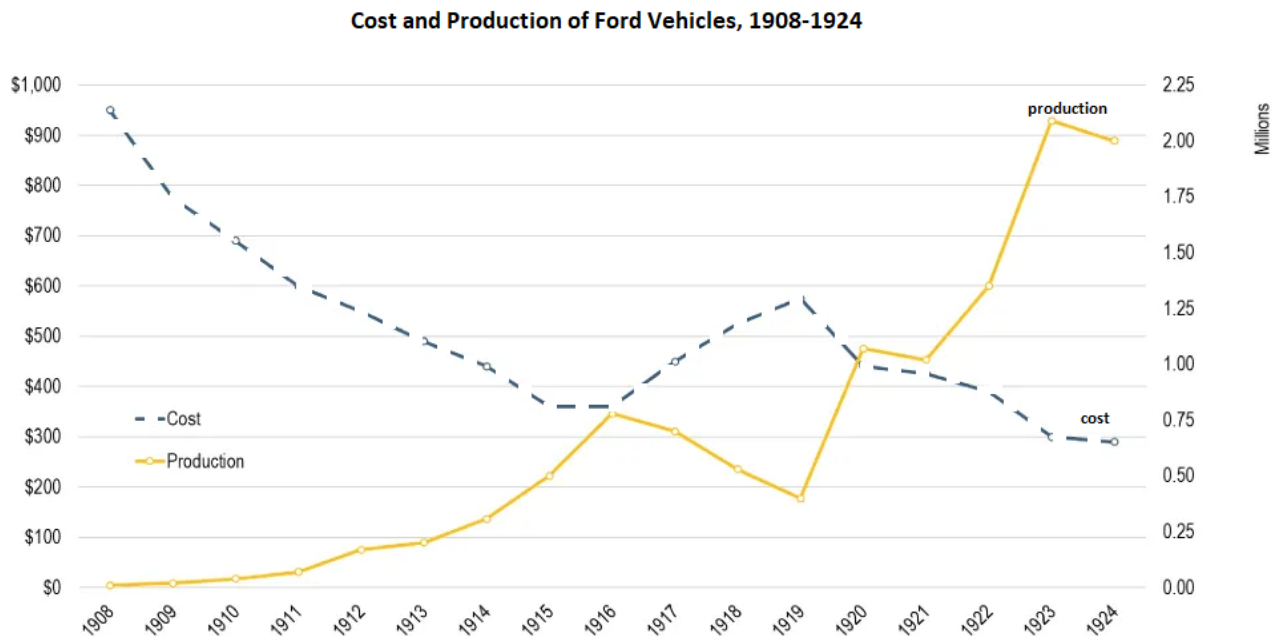
Choose ONE of the following topics. Write between 150 and 200 words.

### I. GUIDED WRITING – GRAPH INTERPRETATION

Imagine you are participating in a research project which examines trends in the cost and production of Ford vehicles in the early years of its manufacture. You have been asked to write an analysis of these trends from 1908 to 1924.

In 150-200 words describe and interpret the graph shown below. Use appropriate vocabulary and a variety of different expressions. Use tenses consistently. In your composition:

- describe the trends shown below
- compare the trends
- give possible reasons for the changes in the trends, e.g. a widespread implementation of the assembly line



(Source: [https://transportgeography.org/?page\\_id=1257](https://transportgeography.org/?page_id=1257))

### II. GUIDED WRITING – ESP – AUTOMATYKA I ROBOTYKA

You have been assigned a project which includes writing a short text in English.

In about 150-200 words, discuss GPS technology. In your description cover the following aspects:

- define GPS
- describe the main components and how GPS works
- explain the concept of coordinates and name those provided by GPS
- present the main applications of GPS

Write a few paragraphs.

**TASK: .....**

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

Task Achievement 0-5points	Coherence & Cohesion 0-5points	Vocabulary 0-5 points	Grammar 0-5 points	Total