PART ONE: LISTENING COMPREHENSION (20 POINTS)

I. You will hear an episode of a radio programme about a space mission to Europa, one of Jupiter's moons. Read sentences 1-10, listen to the recording, and <u>circle</u> the correct letter: (T) if the sentences are true, (F) if they are false, or (NO INFO) if the relevant information is not given in the recording. You will hear the recording twice. (10 points)

1. A space mission to Europa will be launched in October. T / F / NO INFO
2. The main body of the spacecraft has a height of 30 feet. T / F / NO INFO
3. The solar panels of the spacecraft unfold in space. T / F / NO INFO
4. Europa is comparable in size to Earth's Moon. T / F / NO INFO
5. Europa is attractive to scientists due to the large amount of water present. T / F / NO INFO
6. According to the researchers, Europa does not have the essential elements needed for life. T / F / NO INFO
7. The surface of Europa experiences extremely high pressure that makes it difficult for life to exist. T / F / NO INFO
8. Europa's ocean is much younger than the solar system. T / F / NO INFO
9. The team of researchers have high-resolution images of the whole territory of Europa. T / F / NO INFO
10. Scientists believe that launching a landed mission now would be risky. T / F / NO INFO

(Adapted from: BBC Radio 4 - BBC Inside Science, *retrieved 18th October, 2024)*

II. You will hear an interview with Filippo Menczer from Indiana University, who investigated the issue of fake news and why it is spreading. Read sentences 1-10, listen to the recording and complete the sentences below with the words or numbers you hear in the recording. Write NO MORE THAN TWO WORDS for each answer. Transfer your answers to the column on the right. You will hear the recording twice. (10 points)

1.	It is claimed that fake news is _____ the public and it could be compromising elections.	
2.	The study aims to find out if high-quality information is more likely to go _____ than junk or fake news.	
3.	The researchers built a model to study the problem and looked at two particular _____ in this model.	
4.	In terms of statistics, we cannot _____ between the popularity of low and high quality information.	
5.	It is believed that up to _____ of Katy Perry's Twitter followers are fake accounts or bots.	
6.	The people behind fake news websites use bots to _____ the visibility of their posts.	
7.	The researchers have found that bots are extremely _____ at spreading fake news online.	
8.	It is hard to tell if an account is a bot because they are becoming more _____.	
9.	Early bots automatically tweeted or retweeted, and you were able to see their _____.	
10.	Bot accounts follow each other and follow humans, creating _____.	

(Adapted from: https://www.thenakedscientists.com/articles/interviews/fake-news-why-it-spreadingretrieved Nov 10,2024.)

PART TWO: READING COMPREHENSION (20 POINTS)

I. READING 1 (10 points)

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

1. The article below describes:

   a) the life cycle of a well-studied plant.
   b) new developments in agriculture.
   c) a specific experiment.

2. Lunar regolith is:

   a) material found on the surface of the Moon.
   b) a collection of rocks from the Moon.
   c) a synthetic material that resembles the Moon's soil.

3. NASA is interested in Ferl's research, because it:

   a) teaches us about plants from space.
   b) might increase food production in developed countries.
   c) could help feed astronauts in future expeditions.

4. *Arabidopsis thaliana* was the plant used for the experiment, because:

   a) it has a simple genetic structure.
   b) scientists already know a lot about it.
   c) it can be eaten by humans.

5. After six days of growing, the plants grown in the lunar regolith:

   a) looked the same as the control group.
   b) were stronger than those grown in volcanic ash.
   c) didn't grow as well as plants in the control group.

B. For statements 6-10, decide whether they are true (T), false (F) or the information is not given in the text (NO INFO).

6. The lunar regolith samples were found on Earth decades ago. T / F / NO INFO

7. *Arabidopsis thaliana* can feed many people. T / F / NO INFO

8. The plants were placed outside in the sunlight. T / F / NO INFO

9. After two days of growing, all the plants looked alike. T / F / NO INFO

10. Researchers were surprised that all the plants grew. T / F / NO INFO

Scientists Grow Plants in Lunar Soil

In the early days of the space age, the Apollo astronauts took part in a visionary project: bring samples of the Moon's surface material, known as regolith, back to Earth where they could be studied with state-of-the-art equipment and saved for future research not yet imagined. Fifty years later, three of those samples have been used to successfully grow plants. For the first time ever, researchers have grown the tough and well-studied plant *Arabidopsis thaliana* in the nutrient-poor lunar regolith.

"This research is important to NASA's long-term space exploration goals, as we'll need to use resources found on the Moon and Mars to develop food sources for future astronauts living and working in deep space," said NASA Administrator Bill Nelson. It is also a key example of how NASA is working to unlock agricultural innovations that could help us understand how plants might overcome stressful conditions in cold or dry areas here on Earth.

Scientists at the University of Florida have just made a breakthrough discovery, which could enable deeper human exploration of space. "Here we are, 50 years later, completing experiments that were started back in the Apollo labs," said Robert Ferl, a professor in the Horticultural Sciences department at the University of Florida. "We first asked the question of whether plants can grow in regolith. And second, how that might one day help humans have a longer stay on the Moon."

The answer to the first question is a definite yes. Plants can grow in lunar regolith. They were not as healthy as plants grown in Earth soil, or even as those in the control group grown in a lunar simulant made from volcanic ash, but they did indeed grow.

The plant used was *Arabidopsis thaliana*, native to Eurasia and Africa and a relative of mustard greens and other vegetables like broccoli, cauliflower, and Brussels sprouts. It also plays a key role for scientists: due to its small size and ease of growth, it is one of the most studied plants in the world, used as a model organism for research into all areas of plant biology. Scientists already know what its genes look like, how it behaves in different circumstances, even how it grows in space.

To grow the *Arabidopsis*, the team used samples collected on the Apollo missions, with only a gram of Earth soil, volcanic ash or lunar regolith for each plant. The team added water and then seeds to the samples. They then put the trays into terrarium boxes in a clean room. A nutrient solution was added daily. "After two days, they started to grow!" said Anna-Lisa Paul, who is also a professor in Horticultural Sciences at the University of Florida. "Everything grew. I can't tell you how astonished we were! Every plant – whether in a lunar sample or in a control group – looked the same up until about day six."

After day six, however, it was clear that the lunar regolith plants were not as strong as the control group plants growing in volcanic ash, and all the plants were growing differently depending on which type of sample they were in. The lunar regolith plants grew more slowly and had small roots; additionally, some had undersized leaves and displayed reddish pigmentation.

While this groundbreaking research opens the door to someday growing plants in habitats on the Moon, there is still a wide range of additional questions which the team hopes to answer in support of future astronauts traveling to the Moon.

(Adapted from: https://www.nasa.gov/humans-in-space/scientists-grow-plants-in-lunar soil/#:~:text=The%20answer%20to%20the%20first,but%20they%20did%20indeed%20grow)

II. READING 2 (10 points)

The text has four paragraphs, A - D. For statements 1-10, write the correct letter (A - D) in the column on the right OR (X) if the information you search for is not included in any paragraph. Find the paragraph which…

1.	…presents a design approach to making products easier to recycle.	
2.	…mentions a company that offers product parts on subscription.	
3.	…provides multiple examples of household appliances.	
4.	…talks about several firms which have very few clients.	
5.	…gives reasons why small appliances are thrown away rather than repaired.	
6.	…emphasizes a green approach to the phone production process.	
7.	…comments on the cost of professional repair.	
8.	…explains how one business person was praised for their efforts.	
9.	…discusses a disappointing project aimed at extending product life.	
10.	…mentions a way to collect money necessary to do business.	

A. What should we do with a broken kettle? And broken iron, blender, hairdryer or electric shaver, which has reached the end of its useful life; not to mention all the electronic devices which litter our home? The answer which is obvious for older generations – have them repaired or repair them ourselves – does not apply any longer. Devices are built to be discarded rather than fixed and reused: when you try to open them, you damage them even more. Besides, the price of a new product is usually lower than the cost of repair performed by a trained technician. As a result, plenty of small household appliances simply end up in landfills. Even when they are recycled, that usually involves crushing and melting and all that is left is some low-value metals. Is there a way to avoid that?

B. One little-known approach is design for disassembly. Designers come up with clever ways to make it easy to take things apart and replace faulty components, or, if the product is beyond repair, ensure that the materials can separate easily so they can go into the right recycling stream. While the approach has been around for years, it isn't much in evidence when you are doing your shopping. From 2012 to 2016 a project called "The Great Recovery" ran in the UK, aimed at persuading policy makers, manufacturers and engineers to think about designing products in ways that would give them a longer useful life. Despite the enthusiasm of the participants, the project ended without making visible impact on the market.

C. An interesting concept is to build a new relationship between manufacturers and customers, where the seller of the product takes responsibility for its long lifespan. A handful of small companies have been putting the concept into practice. For example, in Rotterdam, the Netherlands, two music lovers noticed that their expensive, good-quality headphones worked properly for no more than half a year. As consumers, they found it impossible to repair them, as everything was glued together. From this experience came an idea. They set up a firm, Gerrard Street, that sells fully modular headphone kits. Customers are asked to pay a monthly fee and if any component breaks, they order a replacement part from the firm. The business is still in operation, but its customer base is small, with no expansion in view.

D. Finally, there is another Dutch company, Fairphone, set up in 2013 to produce sustainable smartphones. Their first phone focused on using ethically-sourced materials. The second version of the phone was also modular - to ensure that customers could change parts which failed or ones they just wanted to upgrade. Fairphone treats its mission very seriously. By 2016 it shipped nearly 100,000 waste phones back from Ghana in order to extract and reuse the minerals within. It is also improving the efficiency of the supply chain to reduce the environmental footprint of its devices. Bas van Abel, the founder and CEO of Fairphone, has won several awards at home and abroad for responsible business. However, there is no escaping the fact that from 2013 to July 2017 Fairphone had sold 130,000 phones, and that it has to rely on crowdfunding to expand (around 1800 individuals collected 2.5 million euros in just under a month in 2017). For a start-up, 130,000 items sold is certainly a success; however, it is less than a tiny fraction of the 1.54 billion smartphones that were sold worldwide in the single year of 2017.

(Based on/adapted from :https://www.bbc.com/news/business-45969676#; https://www.fairphone.com/en/; https://www.digitaltrends.com/mobile/fairphone-mwc17/; http://www.greatrecovery.org.uk/ . Accessed 31 October 2018?8 November 2024)

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)

1. The algorithms on social media platforms have reshaped the nature of free speech. **HAS**

   The nature of free speech ……. the algorithms on social media.

2. The man is holding a disposable cup in his hand. **THERE**

   …….. in the man's hand.

3. According to a recent study, people in the UK are much more sick than those in other countries. **AS**

   According to a recent study, people in other countries …… people in the UK.

4. Scientists suppose that a newly discovered ancient city was home to 50,000 people. **MAY**

   A newly discovered ancient city …….. home to 50,000 people, scientists say.

5. If the UK budget does not provide enough funding for the NHS, the waiting time for appointments will grow. **UNLESS**

   …….. enough funding for the NHS, the waiting time for appointments will grow.

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

1. Algorithms watch our behaviour and determine ……. millions of us see when we log on to social media.

   a) which b) what c) that d) ---

2. The water industry in the UK is in crisis. ' …… be fixed?' people are wondering.

   a) Whether it can b) If it may c) When will it d) How it can

3. …… e-cigarettes remain a valuable tool for helping smokers quit, their use may create new health risks.

   a) Despite b) When c) While d) However

4. Thanks to its immediate proximity to Washington D.C., Northern Virginia …….. a key location for data centres since the 1990s. Local residents are quite unhappy about it.

   a) has been b) had been c) is d) was

5. An advert is something …… people to buy various products.

   a) that makes b) which makes c) to make d) to encourage

III. ESP – VOCABULARY – ARCHITEKTURA (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.

	A		B
1.	**cladding**	**A.**	a groove or set of grooves forming a surface decoration; a pattern of curves cut around the outside of something, especially a round object (e.g. a column)
2.	**fluting**	**B.**	to (cause to) become wider
3.	**taper**	**C.**	a part of a roof or upper story of a building that extends beyond the wall, a projection which provides protection from the weather creates shade
4.	**pitched**	**D.**	a new part or a new room added to a house or other building
5.	**weighty**	**E.**	board made by sticking thin layers of timber on top of each other
6.	**extension**	**F.**	a type of arch that supports a roof or ceiling, especially in a church or public building, or a ceiling or roof supported by several of these arches
7.	**plywood**	**G.**	a flat area of stone or grass outside a house, where people sit and sometimes eat
8.	**overhang**	**H.**	a layer of a hard material, used as protection or decoration
9.	**in situ**	**I.**	(of a roof) sloping; not flat
10.	**vault**	**J.**	a flat slab at the top of a column
		K.	heavy-looking, heavy in proportion to its bulk
		L.	in the original place instead of being moved to another place
		M.	to become gradually narrower at one end, or to make something do this

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.

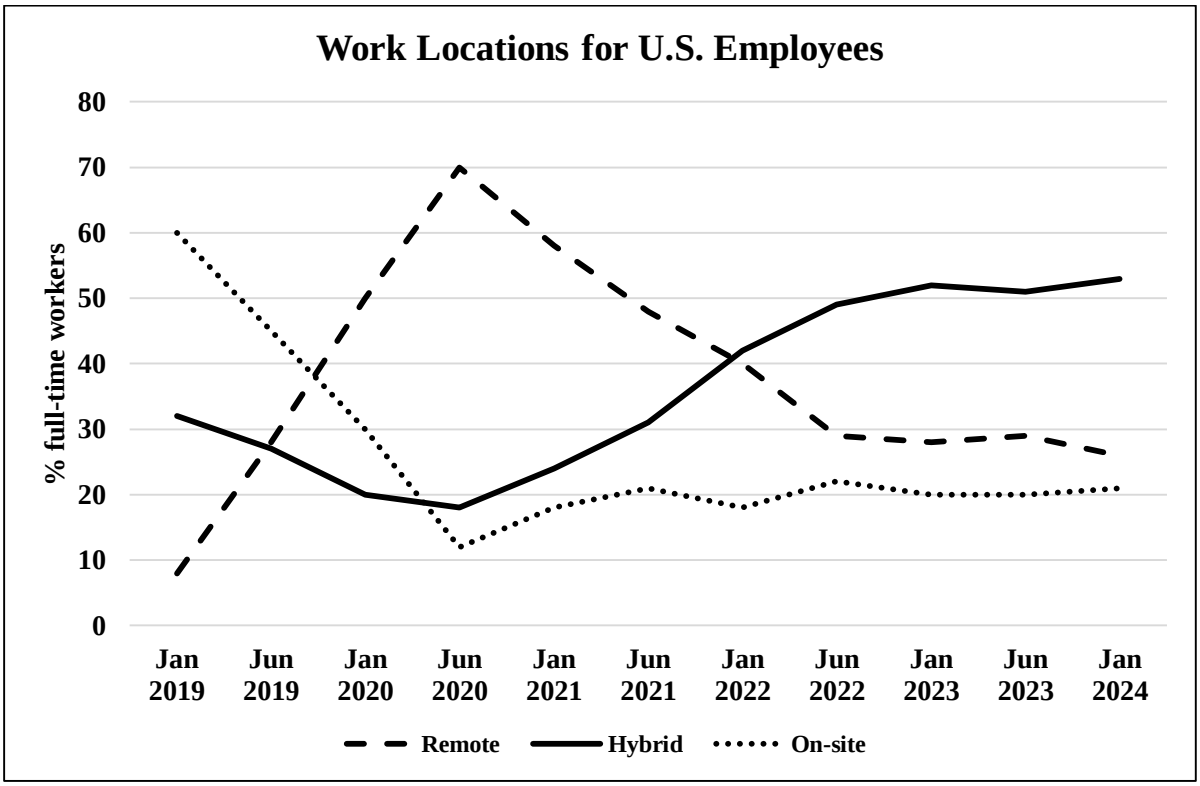
PART FOUR: WRITING (20 POINTS)

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

I. GUIDED WRITING – GRAPH INTERPRETATION

Imagine you are participating in a research project which examines the work patterns of full-time employees in the United States. You have been asked to write an analysis of the major trends in the percentage of people working remotely, in a hybrid system and on-site, at their office, from 2019 to 2024.
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 several possible reasons for the changes in the trends, e.g. implementation of pandemic policies**



(Adapted from: https://www.gallup.com/401384/indicator-hybrid-work.aspx)

II. GUIDED WRITING – ESP – ARCHITEKTURA

You have been assigned a project which includes writing a short text in English.
In about 150-200 words, discuss *ancient Roman and 20th century multi-family residential buildings – The Insula and Unite d'Habitation.* In your description cover the following aspects:

- **common features and differences between the two**
- **overall form and building materials used**
- **placement of residential units and services**
  Write a few paragraphs.

TASK: ……

1 ……..

2 ……..

3 ……..

4 ……...

5 ……...

6 ……...

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29 ……

30 ……

31……..

32……..

33……..

How many words have you written? _____

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