Reading and Use of English Part 7

Task information

- Part 7 consists of one long text with six gaps numbered 41–46.
- Six paragraphs have been removed from the text and placed after it in random order. There is also a seventh paragraph that does not fit in the text at all. These paragraphs are labelled A–G.
- You have to decide which of the paragraphs A–G fits in each of the six gaps in the text.
- The text has a title, and there is often also some general information about the content of the text under the title.
- The task checks your understanding of the overall structure of the text and the way in which it develops its ideas.

Useful language: working with reference clues

1 **Look at this text, which has some missing paragraphs. Underline any words both before and after the gap that might help you find what is missing.**

Trees and the urban environment

Who doesn't like trees? Nobody. Everybody likes trees. But some people really, really like trees. The staff of an organisation in the UK called The Woodland Trust, for example.

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How can this possibly be? Well, unexpected heatwaves can cause serious health problems, the argument goes, and cities get hotter than rural areas, because buildings retain warmth. But trees have the opposite effect: while shade from their branches cools people under them, evaporation from their leaves cools the air around them. Researchers at the UK's Manchester University estimate that increasing the city's green spaces by ten per cent could bring the city's temperature down by several degrees. Which might not have the residents of Manchester cheering now, but once global warming kicks in, they might be a bit more grateful.

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For example, The Woodland Trust goes on to argue, albeit in a tone more hopeful than forceful, 'there is strong evidence' that green spaces 'promote inward investment by creating a more attractive environment for businesses and their staff'. True or not, greenery is certainly good for city birds and animals.

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Given such striking benefits, the trust's report concludes that 'it is vital that the government sets targets for new woodland'. Really, though? It seems unlikely to become a government priority in these straitened times, whatever the long-term financial benefits.

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All the same, just reading about sitting in the cool shade under a leafy tree seems to be having a positive effect on my mental health. Stature and beauty alone can be enough to do it.

2 Think about each of the gaps in Exercise 1. What is likely to be the topic of the text that fills the gap?

3 Now look at options A–D which fill the gaps in Exercise 1. Underline the phrases in each of these options which connect it to other parts of the text. Then decide which option fits where and why. How accurate were your predictions in Exercise 2?

Tip! Connecting words or phrases like *moreover* and *in contrast* will help you work out how the paragraphs fit together.

Tip! Words like *they, so, there, those,* etc. that refer to other parts of the text will also provide useful clues.

A Before that happens, however, they might be pleased to know that the city's rainfall is being quietly managed by its plant life, which reduces water run-off: research indicates that tree cover in cities reduces the cost of drainage and other water management issues. And there are other economic advantages, too.

B Besides, some of the report's claims are a bit shaky. All but 284 of those who died in the most recent heatwave were over 75; trees would not have saved most of them for long. And, with press accounts of aggressive foxes venturing into cities, maybe being kind to urban wildlife isn't as valued as it might be.

C Business covered, the report turns back to health issues. Poor air quality shortens 24,000 lives a year; trees absorb the filth. Without green spaces to walk in, city people get fat, lazy and stressed; trees help with that, too. There are reports that link greenery with reducing blood pressure, raising self-esteem and even controlling behavioural problems in children.

D 'We need more native trees and woods in urban areas,' insists the Trust's report *Greening the Concrete Jungle*. Stature and beauty aside, trees have a positive effect on physical and mental health, they bring financial benefits to the cities where they grow and they are good for urban wildlife. They can even save lives, possibly.

Reading and Use of English Part 7

Action plan

1 Read the title and, if there is one, the introduction to the text – it will give you an overview of the topic.

2 Read through the text without trying to work out which paragraph goes where.

3 Read through the options A–G, noticing the differences between them.

4 Look carefully at the words before and after the missing paragraph and make sure your choice of paragraph fits 'at both ends'.

5 If you are sure you know the answer to any of the gaps, fill those in first.

6 Do not leave any answers blank – make an intelligent guess if you are not sure of the answer.

7 When you have finished, read through the text with your answers in place to check that it all makes sense.

See next page

Follow the exam instructions, using the advice to help you.

You are going to read an extract from a magazine article. Six paragraphs have been removed from the extract. Choose from the paragraphs **A–G** the one which fits each gap (**41–46**). There is one extra paragraph which you do not need to use.

Mark your answers **on the separate answer sheet.**

Beautiful music makes better materials

The hidden structures of music are universal patterns of nature – and they can help us create new materials like artificial silk.

Our world consists of only about 100 different chemical elements. It is the arrangement of these elements, or building blocks, into molecules that gives rise to the rich set of materials around us – from the sugar molecules in the food we eat to the oxides in the Earth's crust.

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The properties of a piece of matter, however, are defined not by these basic building blocks themselves but by the way they are arranged. For instance, spider silk is one of the most remarkable examples of nature's materials, created from a simple protein but spun into fibres stronger than steel.

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A composer uses a limited set of tones as the starting point for melodies, which in turn are arranged into complex structures to create symphonies. Think of an orchestra, where each instrument plays a relatively simple series of tones. Only when combined do these tones become the complex sound we call classical music.

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Composers have made use of the idea of interconnecting patterns for thousands of years, but only recently have these systems been understood mathematically. This maths shows that the principles of musical composition are shared by many seemingly quite different systems in the natural world.

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The problem lies in our ignorance of the ways in which these are arranged. But in fact it is not the building block itself that is limiting our ability to create better materials, but rather our ignorance of the way in which these building blocks are arranged. To try to understand this better, scientists are copying the structure of silk fibres and turning it into musical compositions. This will help them create artificial materials for medical and engineering applications.

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Listening to the music that was produced in this way improved their understanding of the mechanism by which the patterns of amino acids work together during the silk-spinning process. The patterns of amino acids that formed silk fibres of poor quality, for example, translated into music that was aggressive and harsh, while the ones that formed better fibres sounded softer and more fluid. In future work it is hoped that the design of the silk can be improved by enhancing those musical qualities that reflect better properties.

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Using music as a tool to create better materials and to improve urban living may seem like an unusual proposal, but when we appreciate that the underlying mathematics of the structure of music are shared across many fields of study, it begins to make sense. Nature does not distinguish between what is art and what is material, as all are merely patterns of structure in space and time.

Advice

41 The phrase 'these basic building blocks themselves' gives a clue as to what fits in gap 41.

42 Given the sentence after the gap, what topic must be introduced in the missing paragraph?

43 Looking at the paragraphs before and after the text should suggest what the basic topic of the missing paragraph must be.

44 What does the use of 'But' immediately following the gap tell you about what must go in 44?

45 Look at the sentence before and the one after this gap. What do these sentences tell you about the content of the intervening paragraph?

46 What does the use of 'to improve urban living' after the gap suggest about what might go in 46, given that this is not a topic that has been focused on elsewhere in the text?

Tip! Look at the connecting words in options A–G for clues about what must go before or after them.

A In essence, a musician's piece is just one example of a system where smaller patterns are found inside larger ones – similar to the way characters form words, which form sentences, then chapters and eventually a novel.

B Using this theory, we can discover universal patterns that form the blueprints of our world. We may be able to make everything we know – molecules, living tissues, music, the universe – by applying universal patterns in different physical contexts. For example, a pattern of building blocks might be represented as music, to create a certain melody, or might be represented as DNA to create a certain protein.

C This approach has implications far beyond the design of new materials. In future, it might be possible to translate melodies to design better sequences of DNA, or even to reinvent transportation systems for cities.

D Similarly, in the living world, a limited set of building blocks of DNA and amino acids creates some of the most remarkable materials we know of, the stuff that builds our bones and skin, and complex organs such as the brain.

E In this translation from silk to music, they replaced the protein's building blocks with corresponding musical building blocks (tones and melody). As the music was played, they could 'hear' the different series of organic compounds they had used, and could then work out how certain qualities of the material, such as its mechanical strength, appear in musical terms.

F As we begin to appreciate the importance of such patterns, engineers are applying this knowledge to the design of synthetic materials. Doing so, they can gain inspiration from a surprising source: music.

G Even though nature uses this approach, people have failed to exploit the concept themselves when it comes to developing new materials. We have created thousands of different materials, originating from very different sources, such as plastics, metals or ceramics. But it seems we could benefit considerably from learning more about how nature uses its building blocks.

Follow-up

Did you find the clues before or those after the gap more useful in each case?