IELTS Reading
Academic

Test 1

READING PASSAGE 1

You should spend about 20 minutes on Questions 1–14, which are based on Reading Passage 1 on the next page.

Questions 1–5
Reading Passage 1 has 6 sections, A–F.
*Choose the correct headings for Sections **A** and **C–F** from the list of headings below.*
Write the correct number i–viii in answer boxes 1–5.

List of headings	
i	Detecting lies and opportunities
ii	The development of olfaction
iii	Smelling for survival
iv	Trends in perfume making
v	Smell and memory
vi	The impact of smell in retail
vii	The science behind creating popular scents
viii	The complexity of smell

Example:

		Answer
1	Section **B**	*iii*

1	Section **A**	
2	Section **C**	
3	Section **D**	
4	Section **E**	
5	Section **F**	

The Sense of Smell

Section A

Although we may take it for granted, our ability to smell, also called olfaction, has played a crucial role in human evolution. Olfaction enabled early humans to identify food sources, and differentiate between safe things to eat and those which were potentially harmful. Smell also helps reinforce vital blood bonds. Research has shown that humans develop an innate olfactory instinct within the womb. Unborn babies become familiar with the unique smell of their mother, meaning that when born, they can distinguish their caregiver from other adults. Likewise, mothers can instinctively recognise the so-called "odour cues" of their own baby. As a result, when faced with similar-looking infants, parents can identify their own offspring, thereby ensuring the safety of their baby. Would the human race have flourished as it has without olfaction?

Section B

In addition to detecting actual scents or odours, smell is the sense often associated with identifying hidden threats to our wellbeing. We don't literally use our nose to discover whether someone is being dishonest. Rather, we often refer to our feelings of suspicion or mistrust in smell-related terms, as the expression "to smell a rat" illustrates. Likewise, the idiom "smell blood" is used when we sense an opportunity to take advantage of someone we believe is in a weak position. Similar expressions exist in many other languages, suggesting that, compared to other senses, we may have a more emotional or even instinctive relationship with smell. This is just one aspect that arguably makes olfaction the most mysterious of the five senses.

Section C

Of course, humans now employ multiple senses when interacting with the world. In fact, much emphasis is now placed on sight and sound. Far more scientific research is conducted into these two senses, and, consequently, more is known about them. However, smell is far from being an inferior sense. For one thing, our sense of taste depends heavily on olfaction. What's more, although smell is one of the oldest of the five senses, it is far from the simplest. Our ancient sense of smell has always been remarkably sophisticated. For instance, while our eyes have just four light sensors to sense visual stimuli, the nose uses approximately four hundred different olfactory receptors. Such a large number of highly sensitive receptors enables the nose to identify an astonishing range of scents. In fact, researchers now believe that humans are capable of detecting at least a trillion different smells.

Section D

There are further differences between smell and other senses, especially in the way olfactory information is received and processed in the brain. Information about touch, sight or sound initially enters the brain through an area called the thalamus. However, smells are directly processed in a different area called the olfactory bulb, situated by the hippocampus. This area of the brain is involved in learning, long-term memory and emotion, and is necessary for remembering past events and experiences. The fact that only olfactory signals are processed near the hippocampus could indicate that smells are processed on a deeper, more emotional level compared to other types of sensory information. Some experts believe that recalling past experiences from sights or sounds leads to factual types of response. By contrast, odours can create intense emotional reactions, almost as if the smell transports us directly back to the past. This "smell nostalgia" can produce incredibly powerful feelings in us, especially if the memory is associated with someone we haven't seen for a long time.

Section E

The power of smell can even be exploited for commercial gain. One study found that shoppers may spend up to twenty minutes longer in a shop that smells nice, and that pleasant scents could increase the probability of a sale by up to eighty per cent on average. Similarly, the associations we have for certain scents can be used to make people feel certain emotions. That's why baking is a common tactic used when people are trying to sell their home. When potential buyers come to view the property, the smell of baking coming from the kitchen not only makes the home smell nice, but also conveys a sense of cosiness. Subconsciously, people entering the home will make the association with the pleasant scents and positive feelings about the property itself. This can make all the difference in property sales.

Section F

Then there is the perfume sector, which continues to see huge growth. One of the latest innovations has been the development of aromatherapy perfumes designed to enhance one's mood. What's more, luxury fashion houses can attract new customers by developing their own scents. Many consumers want to buy something associated with designer fashion without having to worry about the price. And just like clothing trends, specific perfume ingredients or perfume styles become fashionable at certain points in time. However, unlike clothing, perfume smells slightly different on every person. We all have our own unique skin chemistry, which means that the various ingredients in the perfume react in different ways on our skin. For this reason, no company has managed to create a scent with universal appeal. This again demonstrates our special relationship with smell.

Questions 6–11
Do the following statements agree with the claims of the writer in Reading Passage 1?
In boxes 6–11, write:

TRUE	*If the statement agrees with the information in the passage*
FALSE	*If the statement contradicts the information in the passage*
NOT GIVEN	*If there is no information on this in the passage*

6 Humans' sense of smell starts to develop as soon as they are born. ☐

7 Olfaction receives less academic attention than some other senses. ☐

8 It is impossible to detect different smells without using taste receptors. ☐

9 Sensory signals about smells and sounds are sent to different parts of the brain. ☐

10 Visual memories produce stronger emotional responses than olfactory memories. ☐

11 The use of smell can influence the average amount of money customers spend in shops. ☐

Questions 12–14
Answer the questions below using ***NO MORE THAN THREE WORDS*** *from the passage for each answer.*
Write your answers in boxes 12–14.

12 Which phrase is mentioned as an idiom that is used to express a sense of doubt?

_____

13 What is the minimum number of smells that experts believe the human nose can detect?

_____

14 Which part of the brain is associated with remembering past events?

_____

READING PASSAGE 2

You should spend about 20 minutes on Questions 15–27, which are based on Reading Passage 2 below.

Section A
Commercial farming has seen numerous changes over the years. For instance, agricultural innovations have made farming less labour-intensive, with tasks such as watering and planting crops becoming increasingly mechanised. Likewise, pest management has been transformed with the introduction of chemical pesticides and the development of genetically modified crops. While such developments have helped farms to increase crop yields, food security remains a key concern. Given the rising global population, farmers are struggling to meet the growing demand for affordable, safe produce. At the same time, the environmental impact of agriculture is under closer scrutiny than ever before.

Section B
Agriculture puts a strain on the environment in several ways. Farming requires a substantial amount of land, an issue of global importance as land becomes ever scarcer. Agriculture typically contributes to other important problems, too, such as soil erosion, loss of wildlife habitats and pollution. Environmentalists also point out that the carbon footprint of many forms of agriculture is considerable, as are the energy and water requirements of farming. For these reasons, scientists and growers strive to identify more ecologically sustainable ways to supply the world with fresh food.

Section C
In recent decades, the quest for environmentally friendly farming practices has largely centred on growing crops in town and cities. The development of vertical farming has played an important role in this. As the name suggests, this type of farming involves growing crops in vertical racks or shelves stacked on top of one another rather than planting them horizontally across wide open spaces. Vertical farms maximise urban space by making use of abandoned sites such as vacant apartment blocks, disused underground tunnels, abandoned mine shafts or old shipping containers. While vertical farming is still relatively new, its value has risen sharply. This market is forecast to be worth almost £10 billion within a decade.

Section D
Growing vertically is just one aspect that sets this form of farming apart from conventional agriculture. Another is that the crops are grown without soil. This can be done using a hydroponic growing method, where plants are grown in large trays or containers connected to a large water tank. Instead of taking nutrients from soil, the plants are fed a liquid solution. Using a water pump, the liquid is sent from the water tank into the containers at certain intervals, often regulated by an automatic timer. The liquid solution contains the essential nutrients needed for plant growth. Submerging only the roots of the plant in the solution prevents the plants from suffering damage from excess water. Once the container is full, the solution will overflow and drain back into the tank. The liquid remains there until the timer automatically activates the pump again. Thus, the mineral solution is circulated between the tank and the plant tray. The mineral composition of the solution can be adjusted to ensure plants receive the right amounts of nutrients.

Section E
Of course, plants also need light. In vertical farming, the crops are grown indoors and therefore have limited access to natural light. Therefore, artificial lighting must be used, and arranged in such a way that it can reach every layer of the plants. Placing a single powerful light source directly above the highest layer of plants could result in the top plants being overexposed to harsh light, while the trays of plants beneath them receive insufficient light. Fortunately, with advances in lighting technology, individual lighting units can be placed safely between each layer of plants. This ensures that all plants receive adequate light. In fact, modern LED lighting can be adjusted to generate lighting of different colours and intensity, meaning that it's possible to optimise the lighting specifically for each individual type of crop. Experts argue that this leads to greater control over when the plants flower and even how the crops will taste.

Section F
Clearly, vertical farming makes use of ingenious techniques, and its growing number of supporters argue that it's vital for securing a sustainable food supply. Vertical farming is also relatively efficient in terms of its water requirements, meaning that far less water is used to grow plants. This is an important ecological advantage. In addition, since the crops are grown in areas where they don't have to travel so far to reach their end user, it's argued that this reduces the carbon footprint of agriculture. On top of this, the crop yields achieved by vertical farming methods are impressive, often beating those achieved by conventional farming. For example, one study found that twenty times more lettuce can be grown in vertical farms than in fields. Viewed from the perspective of the planet's diminishing land resources, this is an undeniable benefit, and one that is likely to become increasingly important.

Section G
Investment in vertical-farming technology is increasing. Nevertheless, claims that vertical farming is set to revolutionise agriculture may be a little premature. Unless the expense required to create vertical farms falls, it will remain too costly for most growers. This will prevent vertically farmed produce from being easily affordable. Moreover, many of the world's most popular crops cannot be grown easily using vertical farms. And while vertical farming does offer several ecological benefits, its green credentials can be disputed because of its extremely high energy consumption. Some of these obstacles may eventually be overcome, but it's unlikely that vertical farming will replace conventional farming entirely.

Questions 15–22
Reading Passage 2 has 7 paragraphs labelled A–G.
Which paragraph contains the following information?

*Write the correct letter **A–G** in answer boxes 15–22.*

NB: You may use any letter more than once.

15 evidence that vertical farms can produce high quantities of food ☐

16 a financial prediction about the growth of the vertical-farming sector ☐

17 an example of how a practical problem associated with vertical farming has been resolved ☐

18 a description of how traditional farming can negatively impact nature. ☐

19 an economic argument against vertical farming ☐

20 a description of the locations used for vertical farming ☐

21 an example of how scientific innovation has helped farmers protect their crops ☐

22 a common method of feeding plants in vertical-farming systems ☐

Questions 23–26
Complete the flow chart below.

*Choose **NO MORE THAN TWO WORDS** from the text for each answer.*
Write your answers in gaps 23–26.

Vertical farming: A hydroponic system

In a hydroponic system, crops can be grown without using **(23)**_____.

↓

Instead, plants are grown in containers that receive water from a **(24)**_____.

↓

A liquid is regularly pumped into the containers. This solution contains **(25)**_____ that help plants grow well.

↓

Since only the roots are in contact with the solution, the harmful effects of **(26)**_____ are avoided.

Question 27
Choose the correct letter, A, B, C, D, or E.
Which of the following is the most suitable title for Reading Passage 2?
*Write the correct letter **A–E** in the answer box below.*

A How technology has helped make vertical farms more popular

B Is vertical farming the key to sustainable food supplies?

C Water and energy consumption in vertical farming

D The practical limitations of vertical farming

E How have vertical farms transformed urban environments?

READING PASSAGE 3

You should spend about 20 minutes on Questions 28–40, which are based on Reading Passage 3 below.

New Directions: *Rita Lewis on the marvels of maps*

I've always been fascinated with maps. As a child, I spent hours exploring world atlases memorising the exotic names of all the faraway places that caught my imagination. I was intrigued by the tiny dots of remote islands, and imagined how long it would take to sail to such places, and what I might find there. As an adult, my interest in maps has become more practical. I use them as tools for planning holidays or days out. Maps showing the elevations of hills help me to identify suitable walking routes, while city maps highlight places of local interest. While I've always been curious about maps, only recently has my attention turned towards cartography.

The fact that early humans depicted their surroundings in cave paintings proves we've always sought to understand the physical world. In this sense, maps have existed for millennia. Some ancient maps showed the night sky rather than land features, presumably for navigational purposes. The first published world map is thought to have been the work of the ancient Greek philosopher Anaximander. While he is regarded as the "father of cartography", ancient Chinese cartographers were just as influential. They developed maps with gridlines and scales, which remains an important aspect of modern mapmaking. Jewish cartographers also played an important role by developing charts for navigation at sea. Cartography also owes much to individuals including Piri Reis, Al Idrisi and Fra Mauro. They mapped much of the world and set the foundations of the modern discipline.

It's incredible to think that much of our knowledge about the Earth was discovered using only simple instruments and handmade maps. For centuries, distances were calculated using ropes or chains of specific lengths. Over time, the development of basic instruments and tools helped cartographers and explorers to make their calculations with greater ease. For instance, compasses allowed cartographers to plot angles. Later, the introduction of small telescopes or magnifying glasses attached to these compasses made it easier to see two points that were far apart. Of course, compared with modern maps, many old maps were less detailed. However, given the fact that they were made without the aid of sophisticated digital tools, some of the most ancient maps in existence are remarkably accurate.

We shouldn't assume that inaccuracies on historical maps are the result of miscalculations. Sometimes cartographers intentionally misrepresented geographical features for valid scientific purposes. For instance, in the sixteenth century, the cartographer Gerardus Mercator produced a map which became known as the Mercator projection. As the map was designed to serve as a navigational tool for sailors, Mercator altered the shape and scale of the continents. He did this to make it easier to represent the curved shape of the world on a flat map. This enabled sailors to plot sea routes more easily. The Mercator projection has been extremely influential for centuries and while it isn't perfectly precise, it's still widely used.

Maps from the past also provide us with fascinating insights into the development of our world. Rather than showing physical geographical features like mountains or rivers, political maps focus on features of human geography, such as official boundaries or road systems. Such details can quickly become outdated through no fault of the cartographer. Therefore, such maps shouldn't be viewed as fixed representations of reality, but as records of how the world has been organised at certain points in history. Maps can reveal how the world was once perceived. For instance, ancient European maps often featured artistic elements and symbolic imagery. These illustrations were visual commentaries conveying positive or negative viewpoints about various places. This form of "cartographic propaganda" demonstrates that there is more to maps than geographic fact.

The role of maps extends far beyond presenting technical information in a systematic way. Anyone who has ever seen a beautiful, hand-drawn ancient map would surely accept that cartography's position on the art–science spectrum is open to debate. Cartographers have to keep in mind their intended audience, and the purpose of the product. Much like a cookbook, maps may be used to entertain and inspire as well as inform. Therefore, cartographers should consider not only geographical information, but also ease of use and attractive presentation. Thus, cartography incorporates both scientific and aesthetic elements.

Mapmaking continues to be a highly specialist field, combining technical skill, subject knowledge and an eye for detail. Of course, the mapmaking process has inevitably moved with the times. Modern cartographers have cutting-edge technology at their disposal, helping them to create maps which are as precise as possible. Thanks to digital mapping tools, maps now cover even greater detail than ever. For this reason, the days of struggling with a paper map in the wind and rain may soon be over, as we can consult maps directly on our phones. As this technology becomes widespread, people now entering the mapmaking profession are expected to be familiar with programming languages. Scientific innovations are also used to identify physical changes on the planet. For instance, as the consequences of climate change start to affect the Earth, satellite imaging is playing a key role in helping cartographers to identify areas where maps need to be altered. Unquestionably, mapmaking remains vital.

Questions 28–34
Choose the correct letter, A, B, C or D.
*Write the correct letter **A–D** in answer boxes 28–34.*

28 What does the writer say about her experience of maps?

A Looking at maps has inspired her to visit unusual places.

B She prefers studying cartography to looking at maps.

C Over time, her main reason to look at maps has changed.

D Her knowledge of the world is mainly due to looking at maps.

29 What contribution did early Chinese cartographers make to mapmaking?

A They created a mathematical system of organising places on maps.

B They produced the first complete maps of the entire world.

C They produced the earliest examples of navigational maps.

D They invented new instruments to produce maps.

30 In the past, cartographers used to measure the distance between points using a

A telescope.

B chain.

C compass.

D magnifying glass.

31 What point does the writer make about Mercator's maps?

A Mercator's maps led sailors to make more mistakes.

B Mercator knew there was inaccurate information in his maps.

C Mercator made errors when calculating how big continents were.

D Mercator's maps have become less popular nowadays.

32 Political maps are an example of maps which

A can be interpreted in different ways.

B are designed to change people's attitudes about a place.

C combine geographic and artistic features.

D may go out of date over time.

33 The writer refers to the example of cookbooks to show that

A the purpose of a publication may affect how it is presented.

B there is little difference between art and science.

C it is important to present technical information clearly.

D artistic elements can improve the quality of a factual publication.

34 According to the text, satellite technology is particularly useful for

A discovering new areas that need to be mapped.

B making the mapmaking process more efficient.

C correcting mathematical errors on earlier maps.

D updating maps due to environmental changes.

Questions 35–40
Complete the sentences below with words taken from Reading Passage 3.
*Use **NO MORE THAN TWO WORDS** for each answer.*
Write your answers in boxes 35–40.

35 Early navigational maps depicted the …

_____

36 Some charts that helped sailors navigate were originally created by …

_____

37 A design that made it easier to represent the Earth's round shape on flat maps was the …

_____

38 Using map design to influence people's opinions is a type of …

_____

39 There are different opinions about whether cartography should be categorised as science or …

_____

40 Working as a cartographer now requires knowledge of …

_____