

READING PASSAGE 1

You should spend about 20 minutes on Questions 1-13, which are based on Reading Passage 1 on pages 2 and 3.

A Brief Introduction to Pepper

Pepper, the spice, comes from the berries of a plant that is a woody climbing vine. In the botanical world, pepper belongs to a genus of plants called Piper. This genus was created in 1753 by Carl Linnaeus, the Swedish botanist whose system for classifying plants is still in use today. He placed seventeen species in the piper genus and probably used the ancient Greek name for black pepper, Peperi, as the basis for the group.

Pepper isn't a fast-maturing plant. It takes several years for the branching woody vines to mature, and during their growth the vines can reach up to thirty feet. The pepper berries- which grow in clusters and dangle from the vines-are picked by hand when they are ready for harvesting, which usually begins two or three years after the vine is first planted. Black pepper is picked when the berries are still green, while white pepper is picked later, when the berries have turned from green to red. Preparing the berries for sale involves a lengthy process of drying, cleaning and sorting. Once the berries have been dried, they are then referred to as peppercorns, and these are what are used in food preparation around the world.

The pepper plant loves the warm, humid, rainy tropics, in a narrow band around the equator. Pepper also requires well-drained soils, and its preferred habitat is forests. Unshaded plants which are exposed too long to the sun will not yield many berries. The colourful mixes of whole peppercorns seen in many markets today contain green and black peppercorns. Although there are pink peppercorns, the ripest berries, these are more fragile and are therefore more costly than other kinds. This is why there are few of them in a peppercorn mix.

No one knows when the first human bit into a peppercorn and decided it would taste good on a piece of meat or in a vegetable stew, but in the West it was the ancient Romans who apparently first made pepper an essential part of their meals. Food was only part of the reason for pepper's popularity; health played an equally important role. In the Roman Empire, pepper was employed to relieve the pain that was a common consequence of numerous medical conditions and complaints. If you showed signs of a fever, it was common practice to be given a liquid that had some pepper in it.

The Romans were not the first to embrace pepper as a medicine. Belief in the spice's considerable usefulness is reflected in India's ancient Ayurvedic system of medicine, which is more than three thousand years old. In Sanskrit (a language of ancient India), black pepper is known as maricha or marica, meaning an ability to get rid of poison, which suggests it was used in patients for this purpose. Pepper was also believed by the Indians to have other qualities as well. For example, physicians would frequently apply pepper-based lotions to reduce the effects of decay in teeth, which made it an extremely popular remedy.

In the Middle Ages (5th-15th centuries) black pepper's renown made it a must-have item for the European wealthy, who loved the spice. At that time, pepper was guarded by servants in royal households and kept in the private wardrobes of the rich. It was

considered a privilege to cook with pepper and many of the recipes from the period called for substantial quantities of pepper, which might be considered very unappetising today. But for most people, pepper was too expensive. In the year 1439, a pound of pepper was roughly equal to more than two days' pay in England. Meanwhile, pepper could be exchanged for gold, and also became a form of payment for peoples work. In some of the larger cities, it was even possible to use pepper as rent in some kinds of accommodation. Employees in the pepper industry were not allowed to have pockets in their jackets or trousers so that this valuable commodity would not be stolen.

The huge demand for pepper and the money it could bring encouraged people to risk adventure on foreign oceans and in foreign lands, and it is within this context that the story of pepper really begins.



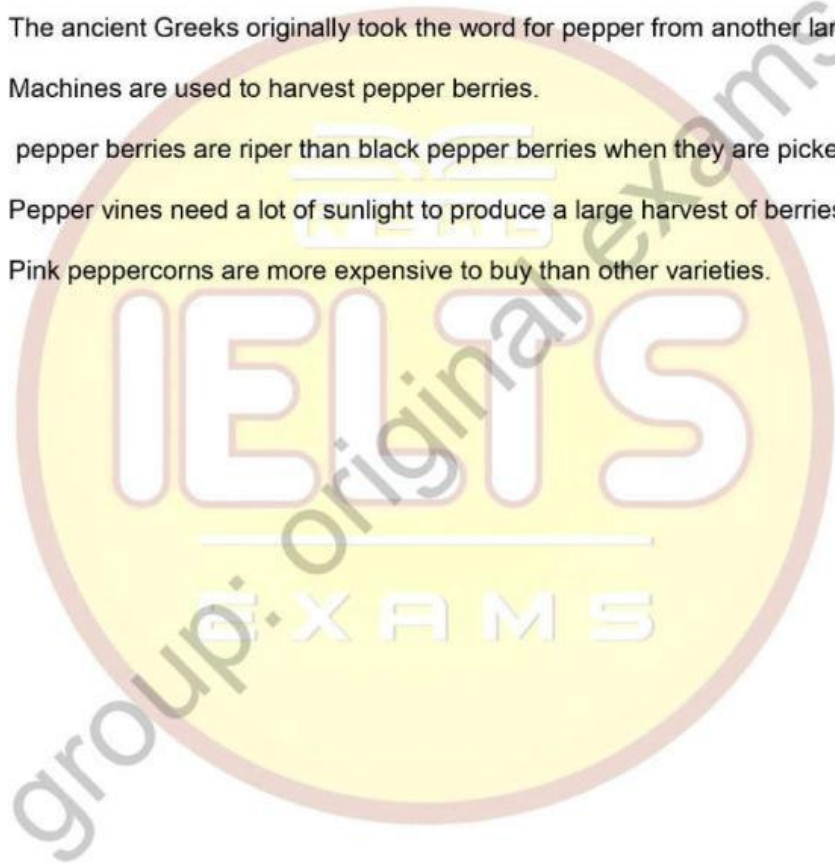
Questions 1-6

Do the following statements agree with the information given in Reading Passage 1?

In boxes 1-6 on your answer sheet, write

TRUE	if the statement agrees with the information
FALSE	if the statement contradicts the information
NOT GIVEN	if there is no information on this

- 1 Carl Linnaeus method for categorising plants has been replaced by a better one.
- 2 The ancient Greeks originally took the word for pepper from another language.
- 3 Machines are used to harvest pepper berries.
- 4 pepper berries are riper than black pepper berries when they are picked.
- 5 Pepper vines need a lot of sunlight to produce a large harvest of berries.
- 6 Pink peppercorns are more expensive to buy than other varieties.



Questions 7-13

Complete the notes below.

Choose **ONE WORD ONLY** from the passage for each answer.

Write your answers in boxes 7-13 on your answer sheet.

The Many Uses of Pepper

Ancient Rome

- the Romans used pepper to reduce 7..... caused by many health issues
- 8 containing pepper was used as medicine to bring down high temperatures

India

- pepper has been used in Ayurvedic medicine for thousands of years
- pepper was thought to be able to extract 9 from people, as indicated by its name in Sanskrit.
- pepper was used to treat problems with peoples 10

Uses in Europe in the Middle Ages

- in wealthy households, pepper was stored in 11
- 12 written at that time required large amounts of pepper
- rent could be paid in the form of pepper in city areas
- people who worked with pepper had to wear clothes without 13..... to discourage theft

READING PASSAGE 2

You should spend about 20 minutes on Questions 14-26, which are based on Reading Passage 2 on pages 6 and 7

The horseshoe crab

A One of the world's oldest animal species, the horseshoe crab, is found along the east coast of the United States and Mexico. Fossil records indicate this creature dates back 450 million years, and it has changed very little over time. This is because its anatomy has been so successful. In fact, the horseshoe crab is more closely related to spiders, scorpions and ticks than it is to true crabs and other crustaceans.

B The soft body of the horseshoe crab is protected by a large oval shell with jagged, point spines. The two-part body consists of a head and an abdominal region. The head region contains a brain, heart, mouth, four eyes and six pairs of legs. What is significant is that horseshoe crabs possess the rare ability to regrow lost limbs. They also use crawling as their primary means of movement, and commonly bury themselves under the surface of the sand. However, in the water, they will occasionally turn onto their backs and swim upside-down. The mouth of the horseshoe crab is located between the twelve legs. They can only eat when crawling, as the motion allows them to open and close their mouths. Their diet consists mainly of worms and clams.

The abdominal region contains muscles for movement and is for breathing. A long spine forming a tail, called a telson, is located behind the abdominal region. Although this part of the body looks intimidating, it is not dangerous, poisonous or used to sting. Horseshoe crabs use it to flip over if they happen to be pushed on their backs, but this is only possible under the sea. Every year, about 10 percent of the horseshoe crab breeding population dies while on the beach, when rough surf flips the creatures onto their backs, a position from which they often cannot right themselves.

C Another distinctive feature of horseshoe crabs is that they do not have hemoglobin (a protein that contains the mineral iron), which gives blood its red color. Hemoglobin is the basis of oxygen transport in the blood of mammals, reptiles and birds. Rather, the blood of horseshoe crabs has a copper-containing protein called hemocyanin. Hemocyanin is dark blue when it is transporting oxygen and colorless when it is not. The oxygen is also transported in a fluid on the exterior of the cell, in contrast to most animals, where oxygen molecules are transported inside red blood cells and fungi. In fact, these enzymes are used by astronauts in the International Space Station to test surfaces for unwanted bacteria and fungi. Another application is a protein from horseshoe crab blood that is under investigation as an antibiotic.

D The horseshoe crab faces the greatest dangers in early life. Between April and June, adult horseshoe crabs travel from deep ocean waters to converge on beaches. Crawling out of the sea and onto the beach is especially common at high tides during full and new moons. The males arrive first and await the females for breeding. Female horseshoe crabs communicate by releasing a scent to signal to the males.

Then female horseshoe crabs create nests by digging holes in the sand and laying between 60,000 and 120,000 eggs at a time before covering them with sand for protection. Most eggs do not survive the hatching period before being eaten, as the

eggs are a food source for numerous birds, reptiles and fish.

E If the egg does survive, the young horseshoe crab will hatch after five weeks. Referred to as larvae, they look like miniature versions of adult horseshoe crabs. When first entering the sea, they exhibit a 'swimming frenzy' similar to that of newborn sea turtles, swimming vigorously and continuously for hours. During the larval stage, which can last a year or more, newly hatched horseshoe crabs travel into the ocean water and settle on the sandy bottom in shallow waters. As they develop, they move into deeper waters.

After the larval stage, horseshoe crabs move into the juvenile period. The juvenile horseshoe crabs will slowly grow over a period of about ten years. The growing process requires shedding small exterior shells, known as exoskeletons, in exchange for larger shells. Horseshoe crabs can shed up to 17 exoskeletons during development and their entire life span can be over twenty years. Mature females can reach 45-50 centimeters from head to tail, while the males grow to approximately 35-40 centimeters.

F Despite their long history, horseshoe crabs face increased threats in modern times. For this reason, scientists have been studying the populations of horseshoe crabs, but more investigation is needed, particularly on the coast of Florida. A widespread decline in their abundance in the last 20 years may be especially severe in the Indian River Lagoon system in Florida. While the horseshoe crab is not currently listed as threatened, there is rising concern about the fact that it is increasingly absent from the Indian River Lagoon system, where it has historically been common. Loss of the horseshoe crab would negatively impact species that feed on the animal and its eggs and would decrease the biodiversity of the lagoon. Moreover, this development might indicate serious ecological disturbance in the region. In the northeast, the use of horseshoe crabs as bait to catch fish over the past ten years is, in part, responsible for a rapidly declining population of this unique species, and it is suspected that this is also a problem in Florida. However, the extent of this has not been well documented.

Questions 14-18

Reading Passage 2 has six sections, **A-F**

Which section contains the following information?

Write the correct letter, **A-F** in boxes 14-18 on your answer sheet.

NB You may use any letter more than once.

- 14 a mention of the horseshoe crab's potential value in medical science
- 15 an explanation of the function of the horseshoe crab's tail
- 16 a reference to the horseshoe crab's feeding habits
- 17 a description of horseshoe crab reproduction
- 18 an account of the horseshoe crab's development to adulthood

Questions 19 and 20

Choose **TWO** letters, **A-E**

Write the correct letters in boxes 19 and 20 on your answer sheet.

According to the writer, which **TWO** of the following are true about the characteristics of horseshoe crabs?

- A They bury themselves upside down.
- B They must continue moving while eating.
- C They most commonly move by swimming.
- D They are able to replace their missing legs.
- E They breathe through their mouth while on land.

Questions 21 and 22

Choose **TWO** letters, **A-E**

Write the correct letters in boxes 21 and 22 on your answer sheet.

According to the writer, in which **TWO** ways is horseshoe crab blood different from that of most other animals?

- A It has a different mineral composition.
- B It lacks a bacteria-fighting protein.
- C Harmless fungi regularly grow in the blood.
- D Its colour changes from blue to red as it circulates.
- E The blood cell carries oxygen its surface.

Questions 23-26

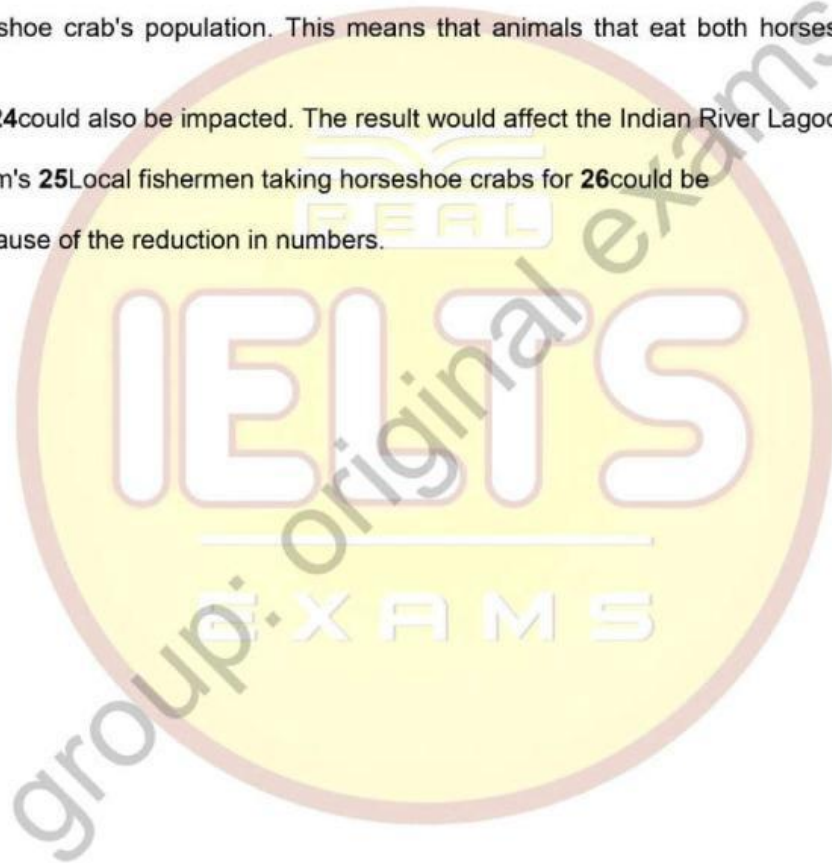
Complete the summary below.

Choose **ONE WORD ONLY** from the passage for each answer.

Write your answers in boxes 23-26 on your answer sheet.

The horseshoe crab in Florida

A study of the Indian River Lagoon system in Florida has shown a **23** in the horseshoe crab's population. This means that animals that eat both horseshoe crabs and their **24** could also be impacted. The result would affect the Indian River Lagoon system's **25** Local fishermen taking horseshoe crabs for **26** could be one cause of the reduction in numbers.



READING PASSAGE 3

You should spend about 20 minutes on Questions 27-40 which are based on Reading Passage 3 on pages 10 and 11.

Temperament

Although temperament the way an individual normally behaves-is a key concept in psychology, as yet, developmental psychologists have not found a single agreed framework to define and measure this human trait.

One of the most influential studies of temperament has been the New York Longitudinal Study (NYLS), initiated during the 1950s by Thomas and Chess. They were the first researchers to develop a systematic theory, and they used a nine-dimensional framework for describing children's temperament across a wide age range, from infancy to adolescence. These dimensions represented behavioural aspects such as activity level, adaptability, distractibility (how easily distracted a child is) and attention span.

One of the major difficulties with this framework is that it has not been possible to confirm that these nine dimensions are independent aspects of temperament. Such interdependence is important, because if any two factors are highly correlated, this implies that a single factor could be used instead. In fact, it is likely that there are fewer than nine independent influences on children's behaviour. For example, a child who is very distractible is also likely to have a short attention span.

Thomas and Chess also suggest that as well as separate dimensions, there are distinct types of temperament. Based on the NYLS sample, they suggest that the basic temperament types can be identified early in infancy: the 'easy' child, the 'slow to warm up' child, and the difficult child. In 1968, they presented findings that indicated that children with the difficult style were at increased risk of later behavioural problems.

However, the concept of the difficult temperament type has been the subject of much controversy. It was argued that the concept was primarily a product of the parents' perceptions of their children, rather than differences in the child's actual behaviour. This concern reached its height when Vaughan found that mothers' future ratings of temperament could be reliably identified before the child was born. Vaughan et al (1987) measured aspects of mother's personalities and attitudes towards child-rearing during their pregnancies and found them to be related to their subsequent ratings of the child's temperament. It was therefore argued that the temperament measure was more influenced by characteristics of the mother than the child.

An alternative theory of temperament was proposed by Buss and Plomin (1984). Partly in response to criticisms of the over-complexity of the Thomas and Chess framework, these researchers developed a simpler system. They were also more strongly influenced by theories of adult personality than were Thomas and Chess.

Buss and Plomin suggested that both experimental laboratory studies and analyses of questionnaire data indicated that there were just three independent temperament dimensions: emotionality, activity and sociability.

In developing their system, Buss and Plomin sought to identify traits that showed early

emergence and strong genetic influence. since they considered that these traits are the basis for adult personality. Despite the differences between the two groups of researchers, both see temperamental differences as varying along a continuum.

In contrast, Kagan (1988) emphasises qualitative distinctions. He and his colleagues have been studying children who they regard as belonging to distinct categories, as determined by their response to unfamiliar events and people. On the basis of a systematic series of observations of their behaviour in the laboratory, they suggest that 15 per cent or so of children aged 2-3 years are very shy and timid when faced with the unfamiliar. A roughly equal percentage are uninhibited and socially responsive when confronting unfamiliar people. These two groups show a high degree (75 per cent) of stability into middle childhood, with the children becoming quiet and cautious, and talkative and sociable respectively. This means, for example, that for the substantial majority of children who show extreme shyness in middle childhood, this is not simply a consequence of recent stresses and upsets, but rather a reflection of enduring qualities of their behaviour.

Kagan proposes that very specific sites in the brain, which regulate emotional behaviour and long-term memory, are responsible for differences in behavioural style. He has shown some physiological differences between these groups of children on measures such as heart rate, heart rate variability and pupil dilation. These are all features which indicate the degree of the child's emotional reactions to experiences.

Dunn and Kendrick (1982) have offered an alternative model for the nature of temperamental differences. They found that most children showed some behavioural reaction to the arrival in the family of a new baby, such as disturbed sleep, increased demands for attention, and more tearfulness, and that differences in the intensity of these reactions were related to temperamental characteristics of the children, as measured before the new sibling was born. They also found that temperamental differences were related to differences in the quality of the interaction between the mother and the older child.

Dunn and Kendrick emphasised that children's behaviour is not independent of the situations in which they find themselves. They suggest that the behavioural style that a child will show in a particular setting is partly a property of the relationship between the child and the other person. To the extent that this relationship is stable, so then will the temperamental differences be stable. Using this explanation, it can be seen that the continuing action of genetic effects on behaviour is not the only mechanism that can produce stable individual differences in behaviour. It is important that theories of temperament consider the child's behaviour in a social context and not in isolation.

Questions 30-34

Complete each sentence with the correct ending, **A-G** below.

Write the correct letter, **A-G**, in boxes 30-34 on your answer sheet

- 30** Buss and Plomin tried to find evidence for
- 31** Kagan rejected the idea that certain traits were mainly a result of
- 32** Kagan suggested that the root of behavioural traits lay in
- 33** Kagan measured children's emotional reactions by assessing
- 34** Dunn and Kendrick reported an effect on temperament of
- | | |
|----------|------------------------------------|
| A | parental response to children. |
| B | particular neurological locations. |
| C | a laboratory setting. |
| D | certain physical functions. |
| E | unpleasant experiences. |
| F | communication problems. |
| G | inherited aspects of temperament. |

Questions 35-39

Do the following statements agree with the claims of the writer in Reading Passage 3?
In boxes 35-39 on your answer sheet, write

YES	if the statement agrees with the claims of the writer
NO	if the statement contradicts the claims of the writer
NOT GIVEN	if it is impossible to say what the writer thinks about this

- 35** Some of Thomas and Chess's temperamental dimensions overlap with each other.
- 36** The concept of the 'difficult temperament' has been accepted without question.
- 37** Vaughan found that mothers' assessments of their children's temperaments were predictable.
- 38** Buss and Plomin relied on data which had been collected at different periods.
- 39** Kagan's studies showed that the majority of children reacted confidently to new people.

Question 40

Choose the correct letter **A, B, C** or **D**.

Write the correct letter in box 40 on your answer sheet.

What is the best title for Reading Passage 3?

- A** The role of temperament in behavioural problems
- B** The effect of temperament on family relationships
- C** A comparison of different theories of temperament
- D** A new development in the study of temperament