

Section 1

You should spend about **20** minutes on Questions **1–15**, which are based on the reading passage below.

SUGAR AND OTHER SWEETENERS

The sweetness of a substance results from physical contact between that substance and the many thousand taste buds of the tongue. The taste buds are clustered around several hundred small, fleshy protrusions called *taste papilla* which provide a large surface area for the taste buds and ensure maximum contact with a substance.

Although there are many millions of *olfactory cells* in the nose, taste is a more intense experience than smell; food technologists believe this is because of the strong pleasure relationship between the brain and food. And it is universally acknowledged that sweetness is the ultimate pleasurable taste sensation. For example, the French writer Marcel Proust is famous for using this idea in his work: eating a particular cake by chance one day brings back extremely vivid memories of childhood for the narrator of his epic *In Search of Past Time*. The words 'sugar', 'honey' and 'sweetie' are used by lovers as terms of endearment. Pregnant women can often ward off morning sickness by eating something sweet. In Tudor times*, to have teeth blackened by decay from eating too much sugar was seen as a desirable characteristic open only to the rich and aristocratic upper class. Even recently, with the harm sugar can do much more widely known, advertisers have managed to create demand for sweet-tasting cakes with the catch-phrase 'naughty but nice'. Despite the attraction of all things sugary, however, no-one is sure what exactly makes a substance sweet. WWW.THEIELTSHUB.COM

Nature is abundant with sweet foodstuffs, the most common naturally occurring substance being *fructose*, which is found in almost all fruits and berries and is the main component of honey. Of course, once eaten, all foods provide one or more of the three basic food components - *protein, fat and carbohydrate* - which eventually break down (if and when required) to supply the body with the essential sugar *glucose*. Nature also supplies us with sucrose, a naturally occurring sugar within the sugar cane plant, which was discovered and exploited many centuries BC. Sucrose breaks down into glucose within the body. Nowadays, this white sugar is the food industry standard taste for sugar - the benchmark against which all other sweet tastes are measured. In the U.S.A. a

number of foods, and especially soft drinks, are commonly sweetened with *High Fructose Corn Syrup (HFCS)*, derived from corn starch by a process developed in the late 1960s. And man has further added to nature's repertoire by developing a dozen or so artificial sweetening agents that are considered harmless, non-active chemicals with the additional property of sweetness (*see Figure 1*), to cater for his sweet tooth.

There is, indeed, an innate desire in humans (and some animals) to seek out and enjoy sweet-tasting foods. Since sweet substances provide energy and sustain life, they have always been highly prized. All food manufacturers capitalise on this craving for sweetness by flavouring most processed foods with carefully measured amounts of sugar in one form or another. The maximum level of sweetness that can be attained before the intrinsic taste of the original foodstuff is lost or unacceptably diminished is, in each case, determined by trial and error. WWW.THEIELTSHUB.COM

Furthermore, the most acceptable level of sweetness for every product - that which produces the optimum amount of pleasure for most people - is surprisingly constant, even across completely different cultures. This probably goes a long way towards explaining the almost universal appeal of Coca-Cola. (*Although the type of sugar used in soft drinks differs from group to group, the intensity and, therefore, pleasure invoked by such drinks remains fixed within a fairly narrow range of agreement.*)

Artificial sweeteners cannot match the luxurious smoothness and mouth-feel of white sugar. Even corn syrup has a slightly lingering after-taste. The reason why food technologists have not yet been able to create a perfect alternative to sucrose (*presumably a non-kilojoule-producing substitute*) is simple. There is no molecular structure yet known that predisposes towards sweetness. In fact, there is no way to know for certain if a substance will taste sweet or even taste of anything at all. Our currently available artificial sweeteners were all discovered to be sweet purely by accident.

* *The Tudor time is the period between 1485 and 1603 in England and Wales and includes the Elizabethan period during the reign of Elizabeth I until 1603.*

Sweetener	Strength	Taste	When Discovered	
Sorbitol	0.6	slightly oily	1872	(France)
Sucrose	1.0	standard	pre – 400 BC	(India)
High Fructose Corn Syrup	1.0	slight after-taste	1960s	(USA)
Cyclamate	30	sickly	1937	(USA)
Aspartame (NutraSweet)	200	close to sucrose but softer, thinner	1965	(USA)
Saccharin	300	slightly bitter after-taste	1878	(Germany)

Figure 1. Commercial Sweeteners. Relative to sucrose - base 1.0.

Questions 1-5

Refer to Reading Passage above "**Sugar and Other Sweeteners**", and look at Questions **1 - 5** below.

Write your answers in boxes **1-5** on your Answer Sheet.

The first one has been done for you as an example.

Example: What do the letters HFCS stand for?

Answer:High Fructose Corn Syrup.....

- 1 & 2.** There are **TWO** naturally occurring sugar substances mentioned in the article other than sucrose. What are they?
- 3.** What does the food industry consider to be the perfect sweetener?
- 4. & 5.** Name the **TWO** most recent artificial sweeteners listed in Figure 1.

Questions 6-15 WWW.THEIELTSHUB.COM

The following paragraphs summarise the reading passage. Choose the **ONE** most appropriate word from the box below the paragraphs to complete each blank space.

Write your answers in boxes **6- 15** on your answer sheet.

The first one has been done for you as an example.

NB: NO WORD CAN BE USED MORE THAN ONCE.

Sugar tastes sweet because of thousands of receptors on the tongue which connect the substance with the brain. The taste of sweetness is

universally(Ex:) **accepted**..... as the most pleasurable known, although it is a(6)..... why a substance tastes sweet.(7)..... is the most naturally occurring sugar, sources of which include(8)..... and honey. Sucrose, which supplies(9)..... to the body, is extracted from the sugar-cane plant, and white sugar (pure sucrose) is used by food(10)..... to measure sweetness in other(11)..... . Approximately a dozen artificial sweeteners have been(12).....; one of the earliest was Sorbitol from France. Manufacturers often add large amounts of sugar to foodstuffs but never more than the(13)..... required to produce the optimum pleasurable taste. WWW.THEIELTSHUB.COM

glucose	sweetened	different	technology	fructose
mystery	artificially	technologists	maximum	commonly
chemical	best	substances	discovered	accepted
fruit	chemist	similar		

Section 2

You should spend about 20 minutes on **Questions 14-27**, which are based on Passage below.

Monkeys and Forests

AS AN EAST WIND blasts through a gap in the Cordillera de Tilaran, a rugged mountain range that splits northern Costa Rica in half, a female mantled howler monkey moves through the swaying trees of the forest canopy.

A. Ken Glander, a primatologist from Duke L University, gazes into the canopy, tracking the female’s movements. Holding a dart gun, he waits with infinite patience for the right moment to shoot. With great care, Glander aims and fires. Hit in the rump, the monkey wobbles. This howler belongs to a population that has lived for decades at Hacienda La Pacifica, a working cattle ranch in Guanacaste province. Other native primates — white-faced capuchin monkeys and spider monkeys — once were common in this area, too, but vanished after the Pan-American Highway was built nearby in the 1950s. Most of the surrounding land was clear-cut for pasture.

B. Howlers persist at La Pacifica, Glander explains, because they are leaf-

eaters. They eat fruit, when it's available but, unlike capuchin and spider monkeys, do not depend on large areas of fruiting trees. "Howlers can survive anywhere you have half a dozen trees because their eating habits are so flexible" he says. In forests, life is an arms race between trees and the myriad creatures that feed on leaves. Plants have evolved a variety of chemical defences, ranging from bad-tasting tannins, which bind with plant-produced nutrients, rendering them indigestible, to deadly poisons, such as alkaloids and cyanide.

C. All primates, including humans, have some ability to handle plant toxins. "We can detoxify a dangerous poison known as caffeine, which is deadly to a lot of animals," Glander says. For leaf-eaters, long-term exposure to a specific plant toxin can increase their ability to defuse the poison and absorb the leaf nutrients. The leaves that grow in regenerating forests, like those at La Pacifica, are actually more howler friendly than those produced by the undisturbed, centuries-old trees that survive farther south, in the Amazon Basin. In younger forests, trees put most of their limited energy into growing wood, leaves and fruit, so they produce much lower levels of toxin than do well-established, old-growth trees.

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D. The value of maturing forests to primates is a subject of study at Santa Rosa National Park, about 35 miles northwest of Hacienda La Pacifica. The park hosts populations not only of mantled howlers but also of white-faced capuchins and spider monkeys. Yet the forests there are young, most of them less than 50 years old. Capuchins were the first to begin using the reborn forests when the trees were as young as 14 years. Howlers, larger and heavier than capuchins, need somewhat older trees, with limbs that can support their greater body weight. A working ranch at Hacienda La Pacifica also explains their population boom in Santa Rosa. "Howlers are more resilient than capuchins and spider monkeys for several reasons, Fedigan explains. "They can live within a small home range, as long as the trees have the right food for them. Spider monkeys, on the other hand, occupy a huge home range, so they can't make it in fragmented habitat"

E. Howlers also reproduce faster than do other monkey species in the area. Capuchins don't bear their first young until about 7 years old, and spider monkeys do so even later, but howlers give birth for the first time at about 3.5 years of age. Also, while a female spider monkey will have a

baby about once every four years, well-fed howlers can produce an infant every two years.

F. The leaves howlers eat hold plenty of water, so the monkeys can survive away from open streams and water holes. This ability gives them a real advantage over capuchin and spider monkeys, which have suffered during the long, ongoing drought in Guanacaste.

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G. Growing human population pressures in Central and South America have led to the persistent destruction of forests. During the 1990s, about 1.1 million acres of Central American forest were felled yearly. Alejandro Estrada, an ecologist at Estacion de Biologia Los Tuxtlas in Veracruz, Mexico, has been exploring how monkeys survive in a landscape increasingly shaped by humans. He and his colleagues recently studied the ecology of a group of mantled howler monkeys that thrive in a habitat completely altered by humans: a cacao plantation in Tabasco, Mexico. Like many varieties of coffee, cacao plants need shade to grow, so 40 years ago the landowners planted fig, monkey pod and other tall trees to form a protective canopy over their crop. The howlers moved in about 25 years ago after nearby forests were cut. This strange habitat, a hodgepodge of cultivated native and exotic plants, seems to support about as many monkeys as would a same-sized patch of wild forest. The howlers eat the leaves and fruit of the shade trees, leaving the valuable cacao pods alone, so the farmers tolerate them WWW.THEIELTSHUB.COM

H. Estrada believes the monkeys bring underappreciated benefits to such farms, dispersing the seeds of fig and other shade trees and fertilizing the soil with feces. He points out that howler monkeys live in shade coffee and cacao plantations in Nicaragua and Costa Rica as well as in Mexico. Spider monkeys also forage in such plantations, though they need nearby areas of forest to survive in the long term. He hopes that farmers will begin to see the advantages of associating with wild monkeys, which includes potential ecotourism projects.

"Conservation is usually viewed as a conflict between agricultural practices and the need to preserve nature," Estrada says. "We're moving away from that vision and beginning to consider ways in which agricultural activities may become a tool for the conservation of primates in human-modified landscapes."

Questions 14-19

The reading Passage has seven paragraphs **A-I**.

Which paragraph contains the following information? Write the correct letter in boxes **14-19** on your answer sheet.

- 14.** a reference of reduction in Forest inhabitant.
- 15.** Only one species of monkey survived while other two species have vanished.
- 16.** a reason for howler Monkey of choosing new leaves.
- 17.** mention to Howler Monkey's nutrient and eating habits.
- 18.** a reference of asking farmers' changing attitude toward wildlife.
- 19.** the advantage for Howler Monkey's flexibility living in a segmented habitat.

Questions 20-22

Look at the following places and the list of descriptions below.

Match each description with the correct place, **A-E**.

Write the correct letter, **A-E**, in boxes **20-22** on your answer sheet.

List of places

- A. Hacienda La Pacifica
- B. Santa Rosa National Park
- C. a cacao plantation in Tabasco, Mexico
- D. Estacion de Biologia Los Tuxtlas in Veracruz, Mexico
- E. Amazon Basin

- 20.** Howler Monkey's benefit to the local region's agriculture
- 21.** Original home for all three native monkeys
- 22.** A place where Capuchins monkey comes for a better habitat

Questions 23-27 WWW.THEIELTSHUB.COM

Complete the sentences below.

Choose **NO MORE THAN TWO WORDS** from the passage for each answer. Write your answers in boxes 23-27 on your answer sheet.

The reasons for Howlers monkey survive better in a focal region than

other two species:

Howlers in La Pacifica since they can feed themselves with leaf when **23**.....is not easily found.

Howlers have better ability to alleviate the **24**..... which old and young trees used to protect themselves).

When compared to that of spider monkeys and capuchin monkeys, the **25** the rate of Howlers is relatively faster (round for just every 2 years).

The monkeys can survive away from open streams and water holes as the leaves howlers eat hold the high content of **26**..... which ensure them to resist to continuous **27**..... in Guanacaste. WWW.THEIELTSHUB.COM

Section 3

You should spend about 20 minutes on **Questions 28-40**, which are based on Passage below.

A. While it may not be possible to completely age-proof our brains, a brave new world of anti-aging research shows that our gray matter may be far more flexible than we thought. So no one, no matter how old, has to lose their mind. The brain has often been called the three-pound universe. It's our most powerful and mysterious organ, the seat of the self, laced with as many billions of neurons as the galaxy has stars. No wonder the mere notion of an aging, failing brain—and the prospect of memory loss, confusion, and the unraveling of our personality—is so terrifying. As Mark Williams, M.D., author of The American Geriatrics Society's Complete Guide to Aging and Health, says, "The fear of dementia is stronger than the fear of death itself." Yet the degeneration of the brain is far from inevitable. " Its design features are such that it should continue to function for a lifetime," says Zaven Khachaturian, Ph.D., director of the Alzheimer's Association's Ronald and Nancy Reagan Research Institute. "There's no reason to expect it to deteriorate with age, even though many of us are living longer lives." In fact, scientists' view of the brain's potential is rapidly changing, according to Stanford University neuroscientist Robert Sapolsky, Ph.D.

“Thirty-five years ago we thought Alzheimer’s disease was a dramatic version of normal aging. Now we realize it’s a disease with a distinct pathology. In fact, some people simply don’t experience any mental decline, so we’ve begun to study them.” Antonio Damasio, M.D., Ph.D., head of the Department of Neurology at the University of Iowa and author of *Descartes’ Error*, concurs. “Older people can continue to have extremely rich and healthy mental lives.”

B. The seniors were tested in 1988 and again in 1991. Four factors were found to be related to their mental fitness: levels of education and physical activity, lung function, and feelings of self-efficacy “Each of these elements alters the way our brain functions,” says Marilyn Albert, Ph.D., of Harvard Medical School, and colleagues from Yale, Duke, and Brandeis Universities and the Mt. Sinai School of Medicine, who hypothesizes that regular exercise may actually stimulate blood flow to the brain and nerve growth, both of which create more densely branched neurons, rendering the neurons stronger and better able to resist disease. Moderate aerobic exercise, including long brisk walks and frequently climbing stairs, will accomplish this. WWW.THEIELTSHUB.COM

C. Education also seems to enhance brain function. People who have challenged themselves with at least a college education may actually stimulate the neurons in their brains. Moreover, native intelligence may protect our brains. It’s possible that smart people begin life with a greater number of neurons, and therefore have a greater reserve to fall back on if some begin to fail. “If you have a lot of neurons and keep them busy, you may be able to tolerate more damage to your brain before it shows,” says Peter Davies, M.D., of the Albert Einstein College of Medicine in the Bronx, New York. Early linguistic ability also seems to help our brains later in life. A recent study in the *New England Journal of Medicine* looked at 93 elderly nuns and examined the autobiographies they had written 60 years earlier, just as they were joining a convent. The nuns whose essays were complex and dense with ideas remained sharp into their eighties and nineties.

D. Finally, personality seems to play an important role in protecting our mental prowess. A sense of self-efficacy may protect our brain, buffering it from the harmful effects of stress. According to Albert, there’s evidence that elevated levels of stress hormones may harm brain cells and cause

the hippocampus—a small seahorse-shaped organ that is a crucial moderator of memory—to atrophy. A sense that we can effectively chart our own course in the world may retard the release of stress hormones and protect us as we age. “It’s not a matter of whether you experience stress or not,” Albert concludes, “it’s your attitude toward it.” Reducing stress by meditating on a regular basis may buffer the brain as well. It also increases the activity of the brain’s pineal gland, the source of the antioxidant hormone melatonin, which regulates sleep and may retard the aging process. Studies at the University of Massachusetts Medical Center and the University of Western Ontario found that people who meditated regularly had higher levels of melatonin than those who took 5-milligram supplements. Another study, conducted jointly by Maharishi International University, Harvard University, and the University of Maryland, found that seniors who meditated for three months experienced dramatic improvements in their psychological well-being, compared to their non-meditative peers.

E. Animal studies confirm that both mental and physical activity boost brain fitness. At the Beckman Institute for Advanced Science and Technology in Urbana, Illinois, psychologist William Greenough, Ph. D., let some rats play with a profusion of toys. These rodents developed about 25 percent more connections between their neurons than did rats that didn’t get any mentally stimulating recreation. In addition, rats that exercised on a treadmill developed more capillaries in specific parts of their brains than did their sedentary counterparts. This increased the blood flow to their brains. “Clearly the message is to do as many different things as possible,” Greenough says.

F. It’s not just scientists who are catching the anti-aging fever. Walk into any health food store, and you will find nutritional formulas —with names like Brainstorm and Smart ALEC—that claim to sharpen mental ability. The book *Smart Drugs & Nutrients*, by Ward Dean, M.D., and John Morgenthaler, was self-published in 1990 and has sold over 120,000 copies worldwide. It has also spawned an underground network of people tweaking their own brain chemistry with nutrients and drugs—the latter sometimes obtained from Europe and Mexico. Sales of ginkgo —an extract from the leaves of the 200-million-year-old ginkgo tree, which has been shown in published studies to increase oxygen in the brain and ameliorate symptoms of Alzheimer’s disease—are up by 22 percent in the last six

months alone, according to Paddy Spence, president of SPINS, a San Francisco-based market research firm. Indeed, products that increase and preserve mental performance are a small but emerging segment of the supplements industry, says Linda Gilbert, president of Health Focus, a company that researches consumer health trends. While neuroscientists like Khachaturian liken the use of these products to the superstition of tossing salt over your shoulder, the public is nevertheless gobbling up nutrients that promise cognitive enhancement.

Questions 28-31 WWW.THEIELTSHUB.COM

Choose the Four correct letters among **A-G**.

Write your answers in boxes **28-31** on your answer sheet.

Which of the **FOUR** situations or conditions assisting the Brains' function?

- A.** Preventive treatment against Alzheimer's disease
- B.** Doing active aerobic exercise and frequently climbing stairs
- C.** High levels of education
- D.** Early verbal or language competence training
- E.** Having more supplements such as ginkgo tree
- F.** Participate in more physical activity involving in stimulating tasks
- G.** Personality and feelings of self-fulfillment

Questions 32-39

Use the information in the passage to match the people (listed **A-G**) with opinions or deeds below.

Write the appropriate letters **A-G** in boxes **32-39** on your answer sheet.

NB you may use any letter more than once

- A. Zaven Khachaturian**
- B. William Greenough**
- C. Marilyn Albert**
- D. Robert Sapolsky**
- E. Linda Gilbert**
- F. Peter Davies** WWW.THEIELTSHUB.COM
- G. Paddy Spence**

32. Alzheimer's was probably a kind of disease rather than a normal aging process.

33. Keeping neurons busy, people may be able to endure more harm to

your brain

- 34.** Regular exercises boost blood flow to the brain and increase anti-disease disability.
- 35.** Significant increase of Sales of ginkgo has been shown.
- 36.** More links between their neurons are found among stimulated animals.
- 37.** Effectiveness of the use of brains supplements products can be of little scientific proof.
- 38.** Heightened levels of stress may damage brain cells and cause part of brain to deteriorate.
- 39.** Products that upgrade and preserve mental competence are still a newly developing industry.

Questions 40

Choose the correct letters among **A-D**.

Write your answers in box **40** on your answer sheet.

According to the passage, what is the most appropriate title for this passage?

- A.** Making our minds last a lifetime
- B.** amazing pills of the ginkgo WWW.THEIELTSHUB.COM
- C.** how to stay healthy in your old hood
- D.** more able a brain and neurons

Answer Key

- 1 & 2. fructose, glucose [in either order]
3. white sugar/ sucrose.
4. & 5. Aspartame (NutraSweet), Cyclamate.
6. mystery
7. fructose
8. fruit
9. glucose
10. technologists
11. substances
12. discovered
13. maximum
14. G
15. A
16. C
17. B
18. H
19. D
20. C
21. A
22. B
23. fruit/ the fruit
24. plant toxin/ toxin
25. reproduction/ reproduce
26. water
27. Drought
28. C
29. D
30. F
31. G
32. D
33. F
34. C
35. G
36. B
37. A
38. C
39. E
40. A