

IELTSFever Academic IELTS Reading Test 108

Reading Passage 1

You should spend about 20 minutes on Questions 1-13, which are based on the IELTSFever Academic IELTS Reading Test 108 Reading Passage DNA Computers below.

DNA Computers

{A} From a modern chemist's perspective, the structure of DNA in our genes is rather mundane. The molecule has a well-known importance for life, but chemists often see only a uniform double helix with almost no functional behavior on its own. It may come as a surprise, then, to learn that this molecule is the basis of a truly rich and strange research area that bridges synthetic chemistry, enzymology, structural nanotechnology and computer science.

{B} Using this new science, scientists have constructed molecular versions of logic gates that can operate in water solutions. Our building these DNA-based computing modules is to develop nanoscopic machines that could exist in living organisms, sensing conditions and making decisions based on what they sense, then responding with actions such as releasing medicine or killing specific cells.

{C} Scientists have demonstrated some of the abilities of our DNA gates by building automata that play perfect games of tic-tac-toe. The human player adds solutions of DNA strands to signal his or her moves, and the DNA computer responds by lighting up the square it has chosen to take next. Any mistake by the human player will be punished with defeat. Although game playing is a long way from our ultimate goals, it is a good test of how readily the elementary molecular computing modules can be combined in plug-and-play fashion to perform complicated functions, just as the silicon-based gates in modern computers can be wired up to form the complex logic circuits that carry out everything that computers do for us today,

{D} Scientists planned to borrow an approach from electrical engineering and create a set of molecular modules, or primitives, that would perform elementary computing operations. In electrical engineering the computing primitives are called logic gates, with intuitive names such as AND, OR and NOT. These gates receive incoming electrical signals that represent the 0s and 1s of binary code and perform logic operations to produce outgoing electrical signals. For instance, an AND gate produces an output 1 only if its two incoming inputs are both 1. Modern-day computers have hundreds of millions of such logic gates connected into very complex circuits, like elaborate structures built out of just a few kinds of Lego blocks. Similarly, scientists hoped that our molecular modules could be mixed together into increasingly complex computing devices.

{E} Scientists did not aim, however, to compete with silicon-based computers. Instead, because someone had just finished a brief stint with a pharmaceutical company, related scientists settled

on developing a system that could be useful for making “smart” therapeutic agents, such as drugs that could sense and analyze conditions in a patient and respond appropriately with no human intervention after being injected. For example, one such smart agent might monitor glucose levels in the blood and decide when to release insulin. Thus, our molecular logic gates had to be biocompatible.

{F} Such molecular modules could have innumerable functions. For instance, in diseases such as leukemia, numerous subpopulations of white blood cells in the immune system display characteristic markers on their cell surfaces, depending on the cells' lineage and their stage of development. Present-day therapies using antibodies eliminate large numbers of these subpopulations at once, because they target only one of the surface markers. Such indiscriminate attacks can suppress the patient's immune system by wiping out too many healthy cells, leading to serious complications and even death. Molecular modules capable of working together to sense and analyze multiple markers—including performing logical operations such as “markers A and either B or C are present, but D is absent” might be able to select the specific subpopulations of cells that are diseased and growing out of control and then eliminate only those cells..

{G} Another application of our modules could be in the analysis of DNA, looking for a large array of possible genetic mutations or identifying one of a wide variety of microbiological pathogens. Our most advanced tic-tac-toe-playing automaton combines 32 different short DNA sequences (oligonucleotides). That many logic gate inputs could analyze four billion possible combinations of oligonucleotides and partition them into thousands of patterns, each pattern being characteristic of certain pathogens or genotypes.

{H} Researchers reported logic gates based on synthetic molecules as long ago as the early 1990s. In 1993, for instance, A. Prasanna de Silva and his collaborators at Queen's University Belfast made AND gates out of small organic molecules that would fluoresce only if both hydrogen ions (from acid) and sodium ions were bound to them. In 1997 J. Fraser Stoddart, now at Northwestern University, and his co-workers made exclusive OR” (XOR) gates, in which the molecules fluoresce in the presence of either, but not both, of the inputs (in this case, hydrogen ions and molecules called amines). These examples, however, were not biocompatible, because they required concentrations of acid and other compounds that would harm living cells.

{I} In the mid-1990s another researchers exploited DNA's ability to store information in its sequence of bases—the molecules conventionally abbreviated as A, T, G and C, which pair up to form the rungs connecting the two strands of the famous double-helix structure. Their techniques, however, were very different from the kind of system we envisaged, namely, one in which molecular logic gates floating in solution would process inputs and outputs in a fashion very analogous to the workings of silicon logic gates. Nevertheless, DNA clearly had a lot of potential for biocompatible computation, and a couple of other advances gave us the tools to invent our own brand of DNA logic gates.

{J} Special dye molecules attached to each end of the substrate strands enable laboratory workers to monitor the cleaving process. At one end of the substrate, the dye molecule is a

"quencher," which prevents the fluorescent marker dye at the other end from fluorescing as long as the strand remains intact, keeping the quencher close enough to be effective. After the strand is cut, its two pieces move apart and the marker dye molecule can fluoresce unhindered. As the work of the DNA enzymes progresses, cutting more and more strands, the solution gradually lights up with the marker dye's fluorescent color.

Questions 1-5

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

In boxes 1-5 on your answer sheet, write

TRUE	if the statement is True
FALSE	if the statement is false
NOT GIVEN	If the information is not given in the passage

- (1) The application based on the structure of DNA molecules ranges from macro- realms to microscopic domains.
- (2) The modern computer based on silicon gates also experienced the similar process from invention to application.
- (3) The original intention for researchers to study on DNA computers was to surpass the traditional computers some day.
- (4) The research on DNA can also benefit from molecular modules which are invented based the exploration of the structure of DNA itself.
- (5) The application of DNA for biocompatible computation can be realized in the near future.

Questions 6-10

The reading Passage has seven paragraphs A-J.

Which paragraph contains the following information?

Write the correct letter A-J, in boxes 6-10on your answer sheet.

- (6) the therapeutic use to deal with glycometabolism
- (7) the main flaw for two teams of researchers' contribution to molecular gates

- (8) given molecules for coloring specific processes
- (9) the link between DNA molecules and several odd research branches
- (10) the selective elimination of targeted cells

Questions 11-13

Complete the following summary of the paragraphs of Reading Passage, using **no more than three words** from the Reading Passage for each answer. Write your answers in boxes 11-13 on your answer sheet.

A principle applied in11..... can be used to produce new forms involving.....12..... which are not based on numerous13..... linked with intricate electrical networks and expected to become more and more complicated computators.

Reading Passage 2

You should spend about 20 minutes on Questions 14-27, which are based on the IELTSFever Academic IELTS Reading Test 108 Reading Passage Monkeys and Forests below.

Monkeys and Forests

AS AN EAST WIND blasts through a gap in the Cordillera de Tilarán, 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 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 defenses, 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.

{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 habitats."

{E} Howlers also reproduce faster than 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.

{G} Growing human population pressures in Central and South America have led to persistent destruction of forests. During the 1990s, about 1.1 million acres of Central American forest were felled yearly. Alejandro Estrada, an ecologist at Estación de Biología 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.

{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 A-I, in boxes 14-19 on your answer sheet.

- (14) a reference of reduction in Forest inhabitant
- (15) Only one species of monkey survived while the other two species 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) Estación de Biología 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

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 local region than other two species - Howlers in La Pacifica since they can feed themselves with leaf when 23..... is not easily found
- Howlers has 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..... 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 high content of 26....., which ensure them to resist to continuous 27... .. in Guanacaste

Reading Passage 3

You should spend about 20 minutes on Questions 28-40, which are based on the IELTSFever Academic IELTS Reading Test 108 Reading Passage Texting! The Television 2 below.

Texting! The Television 2

{A} THERE was a time when any self-respecting television show, particularly one aimed at a young audience, had to have an e-mail address. But on Europe's TV screens, such addresses are increasingly being pushed aside in favour of telephone numbers to which viewers can send text messages from their mobile phones. And no wonder: according to research about to be published by Gartner, a consultancy, text messaging has recently overtaken Internet use in Europe. One of the fastest-growing uses of text messaging, moreover, is interacting with television. Gartner's figures show that 20% of teenagers in France, 11% in Britain and 9% in Germany have sent messages in response to TV shows.

{B} This has much to do with the boom in "reality TV" shows, such as "Big Brother", in which viewers' votes decide the outcome. Most reality shows now allow text-message voting, and in some cases, such as the most recent series of "Big Brother" in Norway, the majority of votes are cast in this way. But there is more to TV-texting than voting. News shows encourage viewers to send in comments; games shows allow viewers to compete; music shows take requests by text message; and broadcasters operate on-screen chatrooms. People tend to have their mobiles with them on the sofa, so "it's a very natural form of interaction," says Adam Daum of Gartner.

{C} It can also be very lucrative, since mobile operators charge premium rates for messages to particular numbers. The most recent British series of "Big Brother", for example, generated 5.4m text-message votes and £1.35m (\$2.1m) in revenue. According to a report from Van Dusseldorp & Partners, a consultancy based in Amsterdam, the German edition of MTV's "Videoclash", which invites viewers to vote for one of two rival videos, generates up to 40,000 messages an hour, each costing euro0.30 (\$0.29). A text contest alongside the Belgian quiz show "1 Against 100" attracted 110,000 players in a month, each of whom paid euro 0.50 per question in an eight-round contest. In Spain, a cryptic-crossword clue is displayed before the evening news broadcast; viewers are invited to text in their answers at a cost of euro 1, for a chance to win a euro300 prize. On a typical day, 6,000 people take part. TV-related text messaging now accounts for an appreciable share of mobile operators' data revenues. In July, a British operator, mm02, reported better-than-expected financial results, thanks to the flood of messages caused by "Big Brother". Operators typically take 40-50% of the revenue from each message, with the rest divided between the broadcaster, the programme maker and the firm providing the message processing system. Text-message revenues are already a vital element of the business model for many shows. Inevitably, there is grumbling that the operators take too much of the pie. Endemol, the Netherlands-based production company behind "Big Brother" and many other reality TV shows, has started building its own database of mobile-phone users. The next step will be to establish direct billing relationships with them, and bypass the operators.

{D} Why has the union of television and text message suddenly proved so successful? One important factor is the availability of special four-, five- or six-digit numbers, called "shortcodes". Each operator controls its own shortcodes, and only relatively recently have operators realised that it makes sense to co-operate and offer shortcodes that work across all networks. The availability of such common shortcodes was a breakthrough, says Lars Becker of Flytxt, a

mobile-marketing firm, since shortcodes are far easier to remember when flashed up on the screen.

{E} The operators' decision to co-operate in order to expand the market is part of a broader trend, observes Katrina Bond of Analysis, a consultancy. Faced with a choice between protecting their margins and allowing a new medium to emerge, operators have always chosen the first. WAP, a technology for reading cut-down web pages on mobile phones, failed because operators were reluctant to share revenue with content providers. Having learnt their lesson, operators are changing their tune. In France, one operator, Orange, has even gone so far as to publish a rate card for text-message revenue-sharing, a degree of transparency that would once have been unthinkable.

{F} At a recent conference organised by Van Dusseldorp & Partners, Han Weegink of CMG, a firm that provides text-message infrastructure, noted that all this is subtly changing the nature of television. Rather than presenting content to viewers, an increasing number of programmes involve content that reacts to the viewer's input. That was always the promise of interactive TV, of course. Interactive TV was supposed to revolve around fancy set-top boxes that plug directly into the television. But that approach has a number of drawbacks, says Mr Daum. It is expensive to develop and test software for multiple and incompatible types of set-top box, and the market penetration, at 40% or less, is lower than that for mobile phones, which are now owned by around 85% of Europeans. Also, mobile-phone applications can be quickly developed and set up. "You can get to market faster, and with fewer grasping intermediaries," says Mr Daum. Providers of set-top box technology are adding text messaging capabilities to their products.

{G} The success of TV-related texting is a reminder of how easily an elaborate technology can be unexpectedly overtaken by a simpler, lower-tech approach. It does not mean that the traditional approach to interactive TV is doomed: indeed, it demonstrates that there is strong demand for interactive services. People, it seems, really do want to do more than just stare at the screen. If nothing else, couch potatoes like to exercise their thumbs.

Questions 28-32

The reading passage has seven paragraphs, A-E

Choose the correct heading for paragraphs A-E from the list below.

Write the correct number, i-v, in boxes 28-32 on your answer sheet.

List of Headings

- (i) an existed critical system into operating in a new way
- (ii) Overview of a fast growing business

- (iii) profitable games are gaining more concerns
- (iv) Netherlands takes the leading role
- (v) a new perspective towards sharing the business opportunities
- (vi) opportunities for all round prevalent applications
- (vii) revenue gains and bonus share
- (viii) the simpler technology prevails over complex ones
- (ix) set-top box provider changed their mind

(28) Paragraph A

(29) Paragraph B

(30) Paragraph C

(31) Paragraph D

(32) Paragraph E

Questions 33-35

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

Write your answers in boxes 33-35 on your answer sheet.

Question 33 In Europe, a consultancy suggested that young audiences spend more money on:

- (A) thumbing text message
- (B) writing Email
- (C) watching TV program
- (D) talking through Mobile phones

Question 34 what happened when some TV show invited audience to participate:

- (A) get attractive bonus
- (B) shows are more popular in Norway than in other countries

- (C) change to invite them to the reality show
- (D) their participation could change the result

Question 35 Interactive TV change their mind of concentrating set-top box but switched to:

- (A) increase their share in the market
- (B) change a modified set-top box
- (C) build a embedded message platform
- (D) march into European market

Questions 36-40

Use the information in the passage to match the people (listed A-E) with opinions or deeds below. Write the appropriate letters A-E in boxes 36-40 on your answer sheet.

- (A) Lars Becker Flytxt
- (B) Katrina Bond of Analysis
- (C) Endemol
- (D) CMG
- (E) mm02
- (F) Gartner

- (36) offer mobile phone message technology
- (37) earned considerable amount of money through a famous program
- (38) shortcodes are convenient to remember when turn up
- (39) build their own mobile phone operating applications
- (40) it is easy for people to send messages in an interactive TV

Answers

