

IELTSFever Academic Reading Test 100

Reading Passage 1

You should spend about 20 minutes on Questions 1-13, which are based on the IELTSFever Academic IELTS Reading Test 100 Reading Passage. Keep a watchful eye on the bridges below.

Keep a Watchful Eye on the Bridges

{A} MOST road and rail bridges are only inspected visually, if at all. Every few months, engineers have to clamber over the structure in an attempt to find problems before the bridge shows obvious signs of damage. Technologies developed at Los Alamos National Laboratory, New Mexico, and Texas A&M University may replace these surveys with microwave sensors that constantly monitor the condition of bridges.

{B} "The device uses microwaves to measure the distance between the sensor and the bridge, much like radar does," says Albert Migliori, a Los Alamos physicist. "Any load on the bridge - such as traffic - induces displacements, which change that distance as the bridge moves up and down." By monitoring these movements over several minutes, the researchers can find out how the bridge resonates. Changes in its behaviour can give an early warning of damage.

{C} The Interstate 40 bridge over the Rio Grande river in Albuquerque provided the researchers with a rare opportunity to test their ideas. Chuck Farrar, an engineer at Los Alamos, explains: "The New Mexico authorities decided to raze this bridge and replace it. We were able to mount instruments on it, test it under various load conditions and even inflict damage just before it was demolished." In the 1960s and 1970s, 2500 similar bridges were built in the US. They have two steel girders supporting the load in each section. Highway experts know that this design is "fracture critical" because a failure in either girder would cause the bridge to fail.

{D} After setting up the microwave dish on the ground below the bridge, the Los Alamos team installed conventional accelerometers at several points along the span to measure its motion. They then tested the bridge while traffic roared across it and while subjecting it to pounding from a "shaker", which delivered precise punches to a specific point on the road.

{E} "We then created damage that we hoped would simulate fatigue cracks that can occur in steel girders," says Farrar. They first cut a slot about 60 centimetres long in the middle of one girder. They then extended the cut until it reached the bottom of the girder and finally they cut across the flange - the bottom of the girder's "T" shape.

{F} The initial, crude analysis of the bridge's behaviour, based on the frequency at which the bridge resonates, did not indicate that anything was wrong until the flange was damaged. But later the data were reanalysed with algorithms that took into account changes in the mode shapes of the structure - shapes that the structure takes on when excited at a particular

frequency. These more sophisticated algorithms, which were developed by Norris Stubbs at Texas A&M University, successfully identified and located the damage caused by the initial cut.

{G} "When any structure vibrates, the energy is distributed throughout with some points not moving, while others vibrate strongly at various frequencies," says Stubbs. "My algorithms use pattern recognition to detect changes in the distribution of this energy." NASA already uses Stubbs' method to check the behaviour of the body flap that slows space shuttles down after they land.

{H} A commercial system based on the Los Alamos hardware is now available, complete with the Stubbs algorithms, from the Quatro Corporation in Albuquerque for about \$100 000. Tim Darling, another Los Alamos physicist working on the microwave interferometer with Migliori, says that as the electronics become cheaper, a microwave inspection system will eventually be applied to most large bridges in the US. "In a decade I would like to see a battery or solar-powered package mounted under each bridge, scanning it every day to detect changes," he says

Questions 1-4

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

Write your answers in boxes 1-4 on your answer sheet.

Question 1 how did the traditional way to prevent damage of the bridges before the invention of new monitoring system

A bridges has to be tested in every movement on two points

B bridges has to be closely monitored by microwave devices

C bridges has already been monitored by sensors

D bridges has to be frequently inspected by professional workers with naked eyes

Question 2 How does the new microwave monitors find out the problems of bridges

A by changeling the distance between the positions of devices

B by controlling the traffic flow on the bridges

C by monitoring the distance caused by traffic between two points

D by displacement of the several critical parts in the bridges

Question 3 why did the expert believe there is a problem for the design called "fracture critical"

A engineers failed to apply the newly developed construction materials

B there was not enough finance to repair the bridges

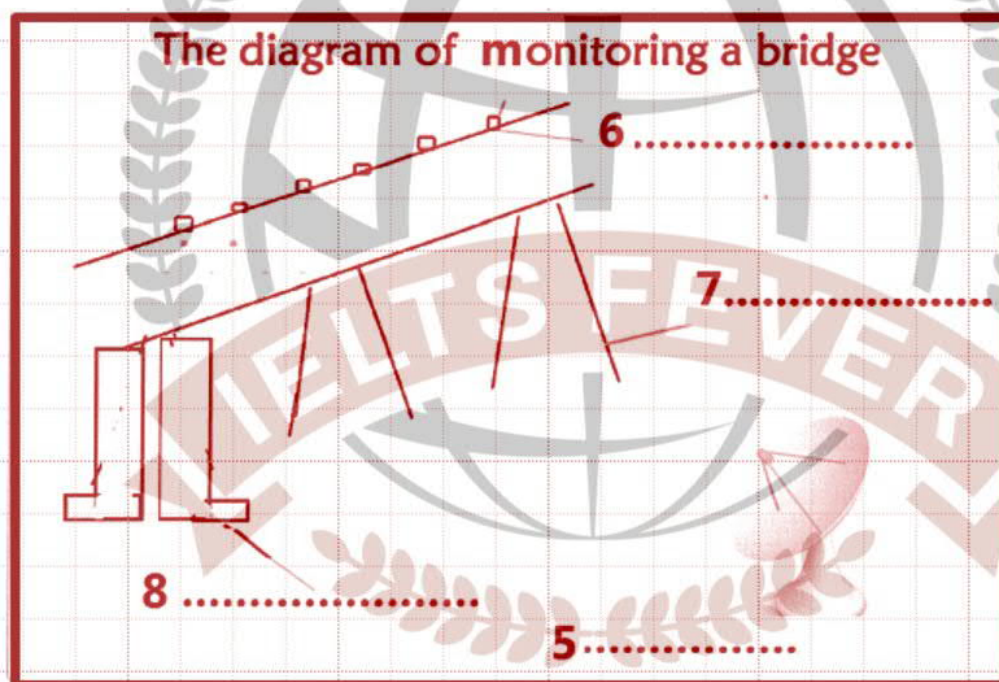
- C the supporting parts of the bridges may crack and cause the bridge to fail
 D there was bigger traffic load conditions than the designers had anticipated

Question 4 Defect was not recognized by a basic method in the beginning

- A until the mid of faces of bridges has fractures
 B until the damage appears along and down to the flanges
 C until the points on the road have been punched
 D until the frequency of resonates appears disordered

Questions 5-8

Filling the blanks in the diagram labels Write the correct answer in boxes 5-8 on your answer sheet.



Questions 9-13

The reading Passage has seven paragraphs A-H.

Which paragraph contains the following information?

Write the correct letter A-H, in boxes 9-13 on your answer sheet.

- (9) how is the pressure that they have many a great chance to test bridges
- (10) A ten-year positive change for microwave device
- (11) the chance they get a honorable contract
- (12) explanation of the mechanism for the new microwave monitoring to work
- (13) How is the damage deliberately created by the researchers

Reading Passage 2

You should spend about 20 minutes on Questions 14-26, which are based on the IELTSFever Academic IELTS Reading Test 100 Reading Passage Computer Provides More Questions Than Answers below.

Computer Provides More Questions Than Answers

{A} The island of Antikythera lies 18 miles north of Crete, where the Aegean Sea meets the Mediterranean. Currents there can make shipping treacherous -- and one ship bound for ancient Rome never made it. The ship that sank there was a giant cargo vessel measuring nearly 500 feet long. It came to rest about 200 feet below the surface, where it stayed for more than 2,000 years until divers looking for sponges discovered the wreck a little more than a century ago.

{B} Inside the hull were a number of bronze and marble statues. From the look of things, the ship seemed to be carrying luxury items, probably made in various Greek islands and bound for wealthy patrons in the growing Roman Empire. The statues were retrieved, along with a lot of other unimportant stuff, and stored. Nine months later, an enterprising archaeologist cleared off a layer of organic material from one of the pieces of junk and found that it looked like a gearwheel. It had inscriptions in Greek characters and seemed to have something to do with astronomy.

{C} That piece of "junk" went on to become the most celebrated find from the shipwreck; it is displayed at the National Archaeological Museum of Athens. Research has shown that the wheel was part of a device so sophisticated that its complexity would not be matched for a thousand years -- it was also the world's first known analog computer. The device is so famous that an international conference organized in Athens a couple of weeks ago had only one subject: the Antikythera Mechanism.

{D} Every discovery about the device has raised new questions. Who built the device, and for what purpose? Why did the technology behind it disappear for the next thousand years? What does the device tell us about ancient Greek culture? And does the marvelous construction, and

the precise knowledge of the movement of the sun and moon and Earth that it implies, tell us how the ancients grappled with ideas about determinism and human destiny?

{E} "We have gear trains from the 9th century in Baghdad used for simpler displays of the solar and lunar motions relative to one another -- they use eight gears," said François Charette, a historian of science in Germany who wrote an editorial accompanying a new study of the mechanism two weeks ago in the journal *Nature*. "In this case, we have more than 30 gears. To see it on a computer animation makes it mind-boggling. There is no doubt it was a technological masterpiece."

{F} The device was probably built between 100 and 140 BC, and the understanding of astronomy it displays seems to have been based on knowledge developed by the Babylonians around 300-700 BC, said Mike Edmunds, a professor of astrophysics at Cardiff University in Britain. He led a research team that reconstructed what the gear mechanism would have looked like by using advanced three dimensional-imaging technology. The group also decoded a number of the inscriptions. The mechanism explores the relationship between lunar months -- the time it takes for the moon to cycle through its phases, say, full moon to full moon -- and calendar years. The gears had to be cut precisely to reflect this complex relationship; 19 calendar years equal 235 lunar months.

{G} By turning the gear mechanism, which included what Edmunds called a beautiful system of epicyclic gears that factored in the elliptical orbit of the moon, a person could check what the sky would have looked like on a date in the past, or how it would appear in the future. The mechanism was encased in a box with doors in front and back covered with inscriptions -- a sort of instruction manual. Inside the front door were pointers indicating the date and the position of the sun, moon and zodiac, while opening the back door revealed the relationship between calendar years and lunar months, and a mechanism to predict eclipses.

{H} "If they needed to know when eclipses would occur, and this related to the rising and setting of stars and related them to dates and religious experiences, the mechanism would directly help," said Yanis Bitsakis, a physicist at the University of Athens who co-wrote the *Nature* paper. "It is a mechanical computer. You turn the handle and you have a date on the front." Building it would have been expensive and required the interaction of astronomers, engineers, intellectuals and craftspeople. Charette said the device overturned conventional ideas that the ancient Greeks were primarily ivory tower thinkers who did not deign to muddy their hands with technical stuff. It is a reminder, he said, that while the study of history often focuses on written texts, they can tell us only a fraction of what went on at a particular time.

{I} Imagine a future historian encountering philosophy texts written in our time -- and an aircraft engine. The books would tell that researcher what a few scholars were thinking today, but the engine would give them a far better window into how technology influenced our everyday lives. Charette said it was unlikely that the device was used by practitioners of astrology, then still in its infancy. More likely, he said, it was bound for a mantelpiece in some rich Roman's home. Given that astronomers of the time already knew how to calculate the positions of the sun and the moon and to predict eclipses without the device, it would have been the equivalent of a

device built for a planetarium today -- something to spur popular interest, or at least claim bragging rights.

{J} Why was the technology that went into the device lost? "The time this was built, the jackboot of Rome was coming through," Edmunds said. "The Romans were good at town planning and sanitation but were not known for their interest in science." The fact that the device was so complex, and that it was being shipped with a quantity of other luxury items, tells Edmunds that it is very unlikely to have been the only one ever made. Its sophistication "is such that it can't have been the only one," Edmunds said. "There must have been a tradition of making them. We're always hopeful a better one will surface." Indeed, he said, he hopes that his study and the renewed interest in the Antikythera Mechanism will prompt second looks by both amateurs and professionals around the world. "The archaeological world may look in their cupboards and maybe say, 'That isn't a bit of rusty old metal in the cupboard.'"

Questions 14-18

The reading Passage has ten paragraphs A-J.

Which paragraph contains the following information?

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

- (14) Content inside the wreck ship
- (15) Ancient astronomers and craftsman might involve
- (16) The location of Antikythera Mechanism
- (17) Details of how it was found
- (18) Appearance and structure of the mechanism

Questions 19-22

Summary

*Complete the following summary of the paragraphs of IELTSFever Academic IELTS Reading Test 100 Reading Passage, using **no more than two words** from the Reading Passage for each answer. Write your answers in boxes 19-22 on your answer sheet.*

An ancient huge sunk _____19_____ was found accidentally by a sponge searcher. The ship is loaded with _____20_____ such as bronze and sculptures. However, an archaeologist found junk similar to a _____21_____ which has Greek script on it. This inspiring and elaborated device was found to be the first _____22_____ in the world.

Questions 23-26

Use the information in the IELTSFever Academic IELTS Reading Test 100 passage to match the people (listed A-C) with opinions or deeds below. Write the appropriate letters A-F in boxes 23-26 on your answer sheet.

NB you may use any letter more than once

- (A) Yanis Bitsakis
- (B) Mike Edmunds
- (C) François Charette

- (23) More complicated than previous device
- (24) Anticipate to find more Antikythera Mechanism in the future
- (25) Antikythera Mechanism was found related to moon
- (26) Mechanism assisted ancient people to calculate the movement of stars.

Reading Passage 3

You should spend about 20 minutes on Questions 27-40, which are based on the IELTSFever Academic IELTS Reading Test 100 Reading Passage The Pearl below.

The Pearl

{A} Throughout history, pearls have held a unique presence within the wealthy and powerful. For instance, the pearl was the favored gem of the wealthy during the Roman Empire. This gift from the sea had been brought back from the orient by the Roman conquests. Roman women wore pearls to bed so they could be reminded of their wealth immediately upon waking up.

Before jewelers learned to cut gems, the pearl was of greater value than the diamond. In the Orient and Persia Empire, pearls were ground into powders to cure anything from heart disease to epilepsy, with possible aphrodisiac uses as well. Pearls were once considered an exclusive privilege for royalty. A law in 1612 drawn up by the Duke of Saxony prohibited the wearing of pearls by nobility, professors, doctors or their wives in an effort to further distinguish royal appearance. American Indians also used freshwater pearls from the Mississippi River as decorations and jewelry.

{B} There are essentially three types of pearls: natural, cultured and imitation. A natural pearl (often called an Oriental pearl) forms when an irritant, such as a piece of sand, works its way into a particular species of oyster, mussel, or clam. As a defense mechanism, the mollusk secretes a fluid to coat the irritant. Layer upon layer of this coating is deposited on the irritant until a lustrous pearl is formed.

{C} The only difference between natural pearls and cultured pearls is that the irritant is a surgically implanted bead or piece of shell called Mother of Pearl. Often, these shells are ground oyster shells that are worth significant amounts of money in their own right as irritant-catalysts for quality pearls. The resulting core is, therefore, much larger than in a natural pearl. Yet, as long as there are enough layers of nacre (the secreted fluid covering the irritant) to result in a beautiful, gem-quality pearl, the size of the nucleus is of no consequence to beauty or durability.

{D} Pearls can come from either salt or freshwater sources. Typically, saltwater pearls tend to be higher quality, although there are several types of freshwater pearls that are considered high in quality as well. Freshwater pearls tend to be very irregular in shape, with a puffed rice appearance the most prevalent. Nevertheless, it is each individual pearls merits that determines value more than the source of the pearl. Saltwater pearl oysters are usually cultivated in protected lagoons or volcanic atolls. However, most freshwater cultured pearls sold today come from China. Cultured pearls are the response of the shell to a tissue implant. A tiny piece of mantle tissue from a donor shell is transplanted into a recipient shell. This graft will form a pearl sac and the tissue will precipitate calcium carbonate into this pocket. There are a number of options for producing cultured pearls: use freshwater or seawater shells, transplant the graft into the mantle or into the gonad, add a spherical bead or do it non-beaded. The majority of saltwater cultured pearls are grown with beads.

{E} Regardless of the method used to acquire a pearl, the process usually takes several years. Mussels must reach a mature age, which can take up to 3 years, and then be implanted or naturally receive an irritant. Once the irritant is in place, it can take up to another 3 years for the pearl to reach its full size. Often, the irritant may be rejected, the pearl will be terrifically misshapen, or the oyster may simply die from disease or countless other complications. By the end of a 5 to 10 year cycle, only 50% of the oysters will have survived. And of the pearls produced, only approximately 5% are of substantial quality for top jewelry makers. From the outset, a pearl farmer can figure on spending over \$100 for every oyster that is farmed, of which many will produce nothing or die.

{F} Imitation pearls are a different story altogether. In most cases, a glass bead is dipped into a solution made from fish scales. This coating is thin and may eventually wear off. One can

usually tell an imitation by biting on it. Fake pearls glide across your teeth, while the layers of nacre on real pearls feel gritty. The Island of Mallorca (in Spain) is known for its imitation pearl industry. Quality natural pearls are very rare jewels. The actual value of a natural pearl is determined in the same way as it would be for other "precious" gems. The valuation factors include size, shape, color, quality of surface, orient and luster. In general, cultured pearls are less valuable than natural pearls, whereas imitation pearls almost have no value. One way that jewelers can determine whether a pearl is cultured or natural is to have a gem lab perform an X-ray of the pearl. If the X-ray reveals a nucleus, the pearl is likely a bead-nucleated saltwater pearl. If no nucleus is present, but irregular and small dark inner spots indicating a cavity are visible, combined with concentric rings of organic substance, the pearl is likely a cultured freshwater. Cultured freshwater pearls can often be confused for natural pearls which present as homogeneous pictures which continuously darken toward the surface of the pearl. Natural pearls will often show larger cavities where organic matter has dried out and decomposed. Although imitation pearls look the part, they do not have the same weight or smoothness as real pearls, and their luster will also dim greatly. Among cultured pearls, Akoya pearls from Japan are some of the most lustrous. A good quality necklace of 40 Akoya pearls measuring 7mm in diameter sells for about \$1,500, while a super- high quality strand sells for about \$4,500. Size, on the other hand, has to do with the age of the oyster that created the pearl (the more mature oysters produce larger pearls) and the location in which the pearl was cultured. The South Sea waters of Australia tend to produce the larger pearls; probably because the water along the coast line is supplied with rich nutrients from the ocean floor. Also, the type of mussel common to the area seems to possess a predilection for producing comparatively large pearls.

{G} Historically, the world's best pearls came from the Persian Gulf, especially around what is now Bahrain. The pearls of the Persian Gulf were naturally created and collected by breath-hold divers. The secret to the special luster of Gulf pearls probably derived from the unique mixture of sweet and salt water around the island. Unfortunately, the natural pearl industry of the Persian Gulf ended abruptly in the early 1930's with the discovery of large deposits of oil. Those who once dove for pearls sought prosperity in the economic boom ushered in by the oil industry. The water pollution resulting from spilled oil and indiscriminate overfishing of oysters essentially ruined the once pristine pearl producing waters of the Gulf. Today, pearl diving is practiced only as a hobby. Still, Bahrain remains one of the foremost trading centers for high quality pearls. In fact, cultured pearls are banned from the Bahrain pearl market, in an effort to preserve the location's heritage. Nowadays, the largest stock of natural pearls probably resides in India. Ironically, much of India's stock of natural pearls came originally from Bahrain. Unlike Bahrain, which has essentially lost its pearl resource, traditional pearl fishing is still practiced on a small scale in India.

Questions 27-30

IELTSFever Academic IELTS Reading Test 100 Reading Passage 3 has seven paragraphs, A-G.

Which paragraph contains the following information?

Write the correct letter A-G in boxes 27-30 on your answer sheet.

(27) ancient stories around the pearl and customers

(28) Difficulties in the cultivation process.

(29) Factors can decide the value of natural pearls.

(30) Different growth mechanisms that distinguish cultured pearls from natural ones.

Questions 31-36

Complete the summary below.

Choose a letter from A-K for each answer. Write them in boxes 31-36 on your answer sheet.

In ancient history, pearls have great importance within the rich and rulers, which was treated as a gem for women in**31**.... And pearls were even used as medicine and sex drug for people in**32**..... There are essentially three types of pearls: natural, cultured and imitation. Most freshwater cultured pearls sold today come from China while the..... **33**.... is famous for its imitation pearl industry. The country.... **34**.... usually manufactures some of the glitteriest cultured ones while the nation such as**35**..... produces the larger sized pearls due to the favorable environment along the coast line. In the past, one country of**36**.... in the Gulf produced the world's best pearls. Nowadays, the major remaining suppliers of the natural pearls belongs to India

A America	B Ancient Rome	C Australia	D Bahrain
E China	F Japan	G India	H Korea
I Mexico	J Persia	K Spain	

Questions 37-40

Do the following statements agree with the information given in the IELTSFever Academic IELTS Reading Test 100 Reading Passage 3? In boxes 37-40 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

(37) Often cultured pearl's centres are significantly larger than in a natural pearl.

(38) Cultivated pearls are generally valued the same much as natural ones.

(39) The size of pearls produced in Japan is usually of a smaller size than those that came from Australia.

(40) Akoya pearls from Japan Glows more deeply than the South Sea pearls of Australia