IELTSFever Academic IELTS Reading Test 115

Reading Passage 1

You should spend about 20 minutes on Questions 1-13, which are based on the IELTSFever Academic IELTS Reading Test 115 Reading Passage Termite Mounds, The Sustainable architecture below.

Termite Mounds, The Sustainable architecture

{A} Africa owes its termite mounds a lot. Trees and shrubs take root in them. Prospectors mine them, looking for specks of gold carried up by termites from hundreds of metres below. And of course, they are a special treat to aardvarks and other insectivores. Now, Africa is paying an offbeat tribute to these towers of mud. The extraordinary Eastgate Building in Harare, Zimbabwe's capital city, is said to be the only one in the world to use the same cooling and heating principles as the termite mound.

{B} Termites in Zimbabwe build gigantic mounds inside which they farm a fungus that is their primary food source. This must be kept at exactly 30.5°C, while the temperatures on the African veld outside can range from 1.5°C at night, only just above freezing, to a baking hot 40°C during the day. The termites achieve this remarkable feat by building a system of vents in the mound. Those at the base lead down into chambers cooled by wet mud carried up from water tables far below, and others lead up through a flue to the peak of the mound. By constantly opening and closing these heating and cooling vents over the course of the day the termites succeed in keeping the temperature constant in spite of the wide fluctuations outside.

{C} Architect Mick Pearce used precisely the same strategy when designing the Eastgate Building, which has no air conditioning and virtually no heating. The building – the country's largest commercial and shopping complex – uses less than 10% of the energy of a conventional building its size. These efficiencies translated directly to the bottom line: the Eastgate's owners saved $3.5 million on a $36 million building because an air-conditioning plant didn't have to be imported. These savings were also passed on to tenants: rents are 20% lower than in a new building next door.

{D} The complex is actually two buildings linked by bridges across a shady, glass-roofed atrium open to the breezes. Fans suck fresh air in from the atrium; blow it upstairs through hollow spaces under the floors and from there into each office through baseboard vents. As it rises and warms, it is drawn out via ceiling vents and finally exits through forty-eight brick chimneys.

{E} To keep the harsh, high veld sun from heating the interior, no more than 25% of the outside is glass, and all the windows are screened by cement arches that jut out more than a metre. During summer's cool nights, big fans flush air through the building seven times an hour to chill the hollow floors. By day, smaller fans blow two changes of air an hour through the building, to

circulate the air which has been in contact with the cool floors. For winter days, there are small heaters in the vents. This is all possible only because Harare is 1,600 feet above sea level, has cloudless skies, little humidity and rapid temperature swings – days as warm as 31°C commonly drop to 14°C at night. You couldn't do this in New York, with its fantastically hot summers and fantastically cold winters,' Pearce said. But then his eyes lit up at the challenge. “Perhaps you could store the summer's heat in water somehow ...'

{F} The engineering firm of Ove Arup & Partners, which worked with him on the design, monitors daily temperatures outside, under the floors and at knee, desk and ceiling level. Ove Arup's graphs show that the temperature of the building has generally stayed between 23°C and 25°C, with the exception of the annual hot spell just before the summer rains in October, and three days in November, when a janitor accidentally switched off the fans at night. The atrium, which funnels the winds through, can be much cooler. And the air is fresh — far more so than in air-conditioned buildings, where up to 30% of the air is recycled.

{G} Pearce, disdaining smooth glass skins as “igloos in the Sahara', calls his building, with its exposed girders and pipes, 'spiky, The design of the entrances is based on the porcupine-quill headdresses of the local Shona tribe. Elevators are designed to look like the mineshaft cages used in Zimbabwe diamond mines. The shape of the fan covers, and the stone used in their construction, are echoes of Great Zimbabwe, the ruins that give the country its name.

{H} Standing on a roof catwalk, peering down inside people as small as termites below, Pearce said he hoped plants would grow wild in the atrium termite fungus, further extending the whole organic machine' metaphor. The architecture, he says, is a regionalised style that responds to the biosphere, to the ancient traditional stone architecture of Zimbabwe's past, and to local human resources.

Questions 1-5

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

Write your answers in boxes 1-5 on your answer sheet.

Question 1 Why do termite mounds have a system of vents?

(A) to allow the termites to escape from predators

(B) to enable the termites to produce food

(C) to allow the termites to work efficiently

(D) to enable the termites to survive at night

Question 2 Why was Eastgate cheaper to build than a conventional building?

(A) Very few materials were imported.

(B) Its energy consumption was so low.

(C) Its tenants contributed to the costs.

(D) No air conditioners were needed.

Question 3 Why would a building like Eastgate not work efficiently in New York?

(A) Temperature change occurs seasonally rather than daily.

(B) Pollution affects the storage of heat in the atmosphere.

(C) Summer and winter temperatures are too extreme.

(D) Levels of humidity affect cloud coverage.

Question 4 What does Ove Arup's data suggest about Eastgate's temperature control system?

(A) It allows a relatively wide range of temperatures.

(B) The only problems are due to human error.

(C) It functions well for most of the year. D The temperature in the atrium may fall too low.

Question 5 Pearce believes that his building would be improved by

(A) becoming more of a habitat for wildlife.

(B) even closer links with the history of Zimbabwe.

(C) giving people more space to interact with nature.

(D) better protection from harmful organisms.

Questions 6-10

Complete the sentences below with words taken from Reading Passage 1.

*Use **NO MORE THAN THREE WORDS** for each answer.*

Write your answers in boxes 6-10 on your answer sheet.

(6) Warm air enters the offices through.....

(7) The warm air leaves the building through.....then the chimneys.

(8) Heat from the sun is prevented from reaching the windows by.....

(9) When the outside temperature drops, ... bring air in from outside.

(10) On cold days, ...raise the temperature in the offices.

Questions 11-13

Choose There correct letter, A, B, C or D. Write your answers in boxes 11-13 on your answer sheet.

Which THREE parts of the Eastgate Building reflect important features of Zimbabwe's history and culture?

(A) the atrium

(B) the glass skins

(C) the entrances

(D) the mineshaft

(E) the elevators

(F) the fan cloves

Reading Passage 2

You should spend about 20 minutes on Questions 14-26, which are based on the IELTSFever Academic IELTS Reading Test 115 Reading Passage Photovoltaics on the rooftop below.

Photovoltaics on the rooftop

{A} natural choice for powering the family home In the past, urban home owners have not always had much choice in the way electricity is supplied to their homes. Now, however, there is a choice, and a rapidly increasing number of households worldwide are choosing the solar energy option. Solar energy, the conversion of sunlight into energy, is made possible through the use of 'photovoltaics, which are simple appliances that fit onto the roof of a house.

{B} The photovoltaics-powered home remains connected to the power lines, but no storage is required on-site, only a box of electronics (the inverter) to the interface between the photovoltaics and the grid network. Figure 1 illustrates the system. During the day, when the home may not be using much electricity, excess power from the solar array is fed back to the grid, to factories and offices that need daytime power. At night, power flows the opposite way. The grid network effectively provides storage. If the demand for electricity is well matched to

when the sun shines, solar energy is especially valuable. This occurs in places like California in the US and Japan, where air-conditioning loads for offices and factories are large but heating loads for homes are small.

{C} The first systematic exploration of the use of photovoltaics on homes began in the US during the 1970s. A well-conceived program started with the sitting of a number of residential experiment stations' at selected locations around the country, representing different climatic zones. These stations contained a number of 'dummy' houses, each with a different solar-energy system design. Homes within the communities close to these stations were monitored to see how well their energy use matched the energy generated by the stations' dummy roofs. A change in US government priorities in the early 1980s halted this program.

{D} With the US effort dropping away, the Japanese Sunshine Project came to the fore. A large residential test station was installed on Rokko Island beginning in 1986. This installation consists of 18 'dummy' homes. Each equipped with its own 2-5 kilowatt photovoltaic system (about 20 - 50 square meters for each system). Some of these simulated homes have their own electrical appliances inside, such as TV sets, refrigerators and air conditioning units, which switch on and off under computer control providing a lavish lifestyle for the non-existent occupants. For the other systems, electronics simulate these household loads. This test station has allowed the technical issues involved in using photovoltaics within the electricity network to be explored in a systematic way, under well-controlled test conditions. With no insurmountable problems identified, the Japanese have used the experience gained from this station to begin their own massive residential photovoltaics campaign.

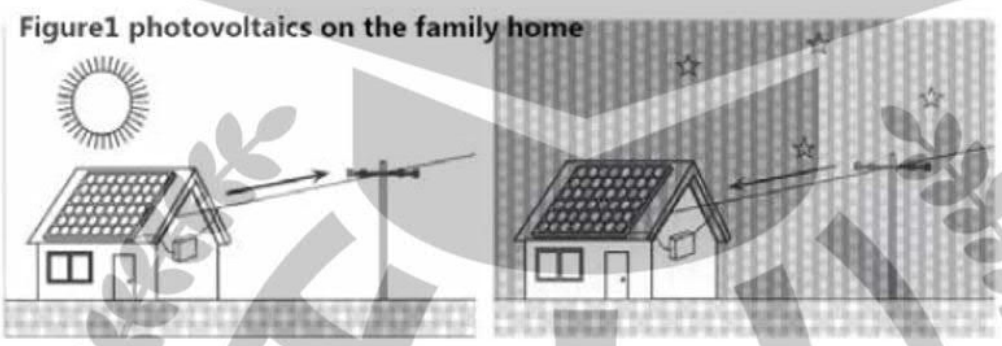
{E} Meanwhile, Germany began a very important (1,000 roof program in 1990, aimed at installing photovoltaics on the roofs of 1,000 private homes. Large federal and regional government subsidies were involved, accounting in most cases for 70% of the total system costs. The program proved immensely popular, forcing its extension to over 2,000 homes scattered across Germany. The success of this program stimulated other European countries to launch similar programs.

{F} Japan's 'one million roof program' was prompted by the experience gained in the Rokko Island test site and the success of the German 1,000 roof program. The initially quoted aims of the Japanese New Energy Development Organization were to have 70,000 homes equipped with photovoltaics by the year 2000, on the way to 1 million by 2010. The program made a modest start in 1994, when 539 systems were installed with a government subsidy of 50 percent. Under this program, entire new suburban developments are using photovoltaics.

{G} This is good news, not only for the photovoltaic industry, but for everyone concerned with the environment. The use of fossil fuels to generate electricity is not only costly in financial terms, but also in terms of environmental damage. Gases produced by the burning of fossil fuels in the production of electricity are a major contributor to the greenhouse effect. To deal with this problem, many governments are now proposing stringent targets on the amount of greenhouse gas emissions permitted. These targets mean that all sources of greenhouse gas emissions including residential electricity use, will receive closer attention in the future.

{H} It is likely that in the future, governments will develop building codes that attempt to constrain the energy demands of new housing. For example, the use of photovoltaics or the equivalent may be stipulated to lessen demands on the grid network and hence reduce fossil fuel emissions. Approvals for building renovations may also be conditional upon taking such energy-saving measures. If this were to happen, everyone would benefit. Although there is an initial cost in attaching the system to the rooftop, the householder's outlay is soon compensated with the savings on energy bills. In addition, everyone living on the planet stands to gain from the more benign environmental impact. Photovoltaics on the family home

Figurel photovoltaics on the family home



Residential use of photovoltaics - by day excess power is sent to the grid, and by night power is supplied to the home.

Questions 14-19

Reading passage 2 has nine paragraphs(listed A-H)

Which paragraph contains the following information?

Write the appropriate letters A-Hin boxes 14-19 on your answer sheet.

NB you may use any letter more than once

(14) examples of countries where electricity use is greater during the day than at night

(15) a detailed description of an experiment that led to photovoltaics being promoted throughout the country

(16) the negative effects of using conventional means of generating electricity

(17) an explanation of the photovoltaics system

(18) the long-term benefits of using photovoltaics

(19) a reference to wealthy countries being prepared to help less wealthy countries have access to photovoltaics

Questions 20-26

Do the following statements agree with the information given in Reading Passage 2?

In boxes 20-26 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

(20) Photovoltaics are used to store electricity.

(21) Since the 1970s, the US government has provided continuous support for the use of photovoltaics on homes.

(22) The solar-powered houses on Rokko Island are uninhabited.

(23) In 1994, the Japanese government was providing half the money required for installing photovoltaics on homes.

(24) Germany, Italy, the Netherlands and Australia all have strict goals with regard to greenhouse gas emissions.

(25) Residential electricity use is the major source of greenhouse gas emission.

(26) Energy-saving measures must now be included in the design of all new homes and improvements to buildings.

Reading Passage 3

You should spend about 20 minutes on Questions 27-40, which are based on the IELTSFever Academic IELTS Reading Test 115 Reading Passage Plant Scents below.

Sir Francis Ronalds and Telegraph

{A} RONALDS, Sir FRANCIS (1788–1873), inventor of the electric telegraph and meteorologist son of Francis Ronalds, a London merchant, and of his wife, Jane, daughter of William Field, was born in London on 21 Feb. 1788. Ronalds was educated at a private school at Cheshunt by the Rev. E. Cogan. At an early age he displayed a taste for experiment, and he acquired great skill later in practical mechanics and draughtsmanship. Under the influence of Jean André de Luc (1727-1817), whose acquaintance he made in 1814, he began to devote himself to practical

electricity. In 1814 and 1815 he published several papers on electricity in Tilloch's 'Philosophical Magazine,' one of which records an ingenious use of De Luc's 'electric column' as a motive power for a clock.

{B} Ronalds's name is chiefly remembered as the inventor of an electric telegraph. Since 1753, when the first proposal for an electric telegraph worked by statical electricity ****.was made by a writer signing C. M.' (said to be Charles Morrison) in the 'Scots Magazine', successive advances had been made abroad by Volta, Le Sage, Lomond, Cavallo, Salva, and others; but much was needed to perfect the invention.

{C} In 1816 Francis Ronalds, then living at Upper Mall, Hammersmith, built in his back garden two frames to accommodate eight miles of wire for his new invention of an electrostatic telegraph. It used clockwork-driven rotating dials engraved with letters of the alphabet and numbers, synchronised with each other, at both ends of the circuit. For the past three or four years, encouraged by the octogenarian Swiss meteorologist, Jean Andre De Luc, Ronalds had been enthusiastically experimenting with electrostatic clockwork devices. When someone desired to send a message he earthed the wire at his end at the moment when the dial indicated the desired letter. At the receiving end the pith balls would fall together when earthed and the recipient noted the letter showing on his dial at that moment. The system was slow and depended on the two dials staying in step, but Ronalds successfully transmitted and received letters over 150 metres of wire ; later he succeeded in sending messages through eight miles of iron wire suspended above his garden in London.

{D} After sending messages along his wires on the frame, he developed another version in which the wires were enclosed in glass tubes buried in the ground. At each end of the line a clockwork mechanism turned synchronously revolving discs with letters on them. A frictional-electricity machine kept the wire continuously charged, while at each end two pith balls hung from the wire on silk threads, and since they were similarly charged from the wire they stayed apart. Ronalds's instrument was of real practical use, and the brilliant idea of using synchronously rotating discs, now employed in the Hughes printing apparatus, was entirely his own. The only defect in his invention was the comparative slowness with which a succession of symbols could be transmitted.

{E} With communications between London and Portsmouth in mind, he believed his telegraph would work over distances of 800km. In the same year, Ronalds wrote to offer his invention to the Admiralty . In fact, in 1806, Ralph Wedgwood submitted a telegraph based on frictional electricity to the Admiralty, but was told that the semaphore was sufficient for the country. In a pamphlet he suggested the establishment of a telegraph system with public offices in different centres. Francis Ronalds, in 1816, brought a similar telegraph of his invention to the notice of the Admiralty, and was politely informed that 'telegraphs of any kind are now wholly unnecessary.' John Barrow, Secretary to the Admiralty, replied that "Telegraphs of any kind are now wholly unnecessary; and no other than the one now in use will be adopted." (The one in use was a semaphore system. Only a year after the end of the Napoleonic Wars, the Admiralty saw no need for improved communications, even though the semaphore was usable only in daylight and good weather.

{F} After this disappointment, Ronalds set off for the continent. He travelled throughout Europe and the Eastern Mediterranean, taking notes, sketching and collecting scientific books between 1816 and 1823. He had begun collecting his large library of works on electricity and kindred subjects. The last activity formed the beginnings of the Ronalds Library, left in trust to the IEE (now the IET) after his death. In a small pamphlet published in 1823, Ronalds described his invention and listed some of its possible uses, "Why should not government govern at Portsmouth almost as promptly as in Downing Street? Why should our defaulters - escape by default in our foggy climate? Let us have Electrical Conversazione offices communicating with each other all over the kingdom if we can." In 1825 he invented and patented a perspective tracing instrument intended to facilitate drawing from nature, which he improved about 1828, and described in a work called 'Mechanical Perspective. These instruments seem to be the only ones for which he took out patents.

{G} However, Ronalds never patented his invention in electric telegraph. Ronalds seems to have made few or no practical contributions to science. In the meanwhile, one person did benefit from this work - Charles Wheatstone who saw the telegraph as a boy. When Charles Wheatstone was quite a child, his father had seen the Ronalds telegraph at work. Later, The invention of an electric telegraph had been marvellously developed by Wheatstone, who had seen many of the Hammersmith experiments, in conjunction with Mr. William Fothergill Cooke, and these two men together devised and patented in 1837 the first electric telegraph used publicly and commercially in England. When, in 1855, a controversy arose between Wheatstone and Cooke with regard to their respective shares in the invention, Wheatstone at once acknowledged his direct debt to Ronalds, and Cooke, though less fully, acknowledged the priority of Ronalds's work; Until 1855 Ronalds's share in the invention had been forgotten by the public.

{H} Early in 1843 Ronalds was made honorary director and superintendent of the Meteorological Observatory, which was then established at Kew by the British Association for the Advancement of Science. He began work on a system for registering meteorological data using photography and this time was awarded a grant to continue his work. A similar system was developed independently by Charles Brooke, aided like Ronalds by grants from the Royal Society, had invented independently about this time. But the British Association confirmed Ronalds's priority. This was the beginning of automatic, accurate recording of meteorological data and remained in use for some years after Ronalds's death.

{I} Ronalds lived long enough to see his prophecies come to fruition and to receive belated official recognition: in 1870, three years before he died, he was knighted by Queen Elizabeth I, for his "early and remarkable labours in telegraphic investigations."

Question 27-31

matching the each correct year to the historical event in the passage, and write the correct Answer into box of 27-31 in the answer sheet

A 1753	B 1806	C 1816	D 1823
E 1825	F 1837	G 1843	

(27) When did Francis Ronalds achieve a satisfactory result in the electricity experiment conducted first time

(28) When was the first proposal of an electric telegraph based on static electricity

(29) When did Ronalds get patent of his invention firstly

(30) Ronalds first made it known and revealed the applicable significance of his telegram to the public.

(31) The contribution being done by Ronalds' invention in meteorological data

Question 32-35

*Answer the questions below. Choose **NO MORE THAN FOUR WORDS AND/OR A NUMBER** from the passage for each answer. Write your answers in boxes 32-35 on your answer sheet.*

(32) What were carved in the experimental dials when doing Ronalds' experiment in his garden?

(33) What was enclosed with the buried telegram wires when Ronalds did the improved experiment?

(34) What is the greatest distance Ronalds believed his telegram could send?

(35) What kind of power supplied to keeping the wire charged continuously

Question 36-40

The passage has paragraphs as A-I; which paragraph contains the following information? Write the appropriate letter A-I for box 36-40 on your answer sheet.

(36) There is a commercial use of the telegram.

(37) There is a contributory influence on Ronalds from a fellow he got to know.

(38) Ronalds's proposal was rejected as the preceding reference to another application.

(39) There existed a drawback of Ronalds's telegram.

(40) Ronalds's contribution in telegraphic investigations was recognised by authority.