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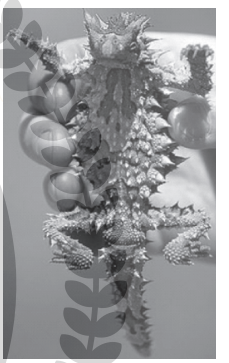
Academic Reading Practice Test 3

IELTSFEVER ACADEMIC READING TEST 3

SECTION 1

BIOMIMETIC

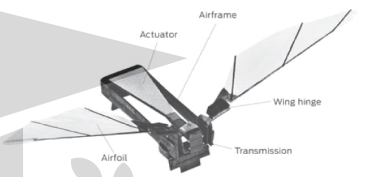
What has fins like a whale, skin like a lizard, and eyes like a moth? The future of engineering. Andrew Parker, an evolutionary biologist, knelt in the baking red sand of the Australian outback just south of Alice Springs and eased the right hind leg of a thorny devil into a dish of water.



A "Its back is completely drenched!" Sure enough, after 30 seconds, water from the dish had wicked up the lizard's leg and was glistening all over its prickly hide. In a few seconds more the water reached its mouth, and the lizard began to smack its jaws with evident satisfaction. It was, in essence, drinking through its foot. Given more time, the thorny devil can perform this same conjuring trick on a patch of damp sand—a vital competitive advantage in the desert. Parker had come here to discover precisely how it does this, not from purely biological interest, but with a concrete purpose in mind: to make a thorny-devil-inspired device that will help people collect lifesaving water in the desert. "The water's spreading out incredibly fast!" he said, as drops from his eyedropper fell onto the lizard's back and vanished, like magic. "Its skin is far more hydrophobic than I thought. There may well be hidden capillaries, channeling the water into the mouth."

B Parker's work is only a small part of an increasingly vigorous, global biomimetics movement. Engineers in Bath, England, and West Chester, Pennsylvania, are pondering the bumps on the leading edges of humpback whale flukes to learn how to make airplane wings for more agile flight. In Berlin, Germany, the fingerlike primary feathers of raptors are inspiring engineers to develop wings that change shape aloft to reduce drag and increase fuel efficiency. Architects in Zimbabwe are studying how termites regulate temperature, humidity, and airflow in their mounds in order to build more comfortable buildings, while Japanese medical researchers are reducing the pain of an injection by using hypodermic needles edged with tiny serrations, like those on a mosquito's proboscis, minimizing nerve stimulation.

C Ronald Fearing, a professor of electrical engineering at the University of California, Berkeley, has taken on one of the biggest challenges of all: to create a miniature robotic fly that is swift, small, and maneuverable enough for use in surveillance or search-and-rescue operations. Fearing made his own, one of which he held up with tweezers for me to see, a gossamer wand some 11 millimeters long and not much thicker than a cat's whisker. Fearing has been forced to manufacture many of the other minute components of his fly in the same way, using a micromachining laser and a rapid prototyping system that allows him to design his minuscule parts in a computer, automatically cut and cure them overnight, and assemble them by hand the next day under a microscope.



D *With the microlaser he cuts the fly's wings out of a two-micron polyester sheet so delicate that it crumples if you breathe on it and must be reinforced with carbon-fiber spars. The wings on his current model flap at 275 times per second—faster than the insect's own wings—and make the blowfly's signature buzz. "Carbon fiber outperforms fly chitin," he said, with a trace of self-satisfaction. He pointed out a protective plastic box on the lab bench, which contained the fly-bot itself, a delicate, origami-like framework of black carbon-fiber struts and hairlike wires that, not surprisingly, looks nothing like a real fly. A month later it achieved liftoff in a controlled flight on a boom. Fearing expects the fly-bot to hover in two or three years, and eventually to bank and dive with flylike virtuosity.*

E Stanford University roboticist Mark Cutkosky designed a gecko-inspired climber that he christened Stickybot. In reality, gecko feet aren't sticky—they're dry and smooth to the touch—and owe their remarkable adhesion to some two billion spatula-tipped filaments per square centimeter on their toe pads, each filament only a hundred nanometers thick. These filaments are so small, in fact, that they interact at the molecular level with the surface on which the gecko walks, tapping into the low-level van der Waals forces generated by molecules' fleeting positive and negative charges, which pull any two adjacent objects together. To make the toe pads for Stickybot, Cutkosky and doctoral student Sangbae Kim, the robot's lead designer, produced a urethane fabric with tiny bristles that end in 30-micrometer points. Though not as flexible or adherent as the gecko itself, they hold the 500-gram robot on a vertical surface.

F Cutkosky endowed his robot with seven-segmented toes that drag and release just like the lizard's, and a gecko-like stride that snugs it to the wall. He also crafted Stickybot's legs and feet with a process he calls shape deposition manufacturing (SDM), which combines a range of metals, polymers, and

fabrics to create the same smooth gradation from stiff to flexible that is present in the lizard's limbs and absent in most man-made materials. SDM also allows him to embed actuators, sensors, and other specialized structures that make Stickybot climb better. Then he noticed in a paper on gecko anatomy that the lizard had branching tendons to distribute its weight evenly across the entire surface of its toes. Eureka. "When I saw that, I thought, Wow, that's great!" He subsequently embedded a branching polyester cloth "tendon" in his robot's limbs to distribute its load in the same way.

G Stickybot now walks up vertical surfaces of glass, plastic, and glazed ceramic tile, though it will be some time before it can keep up with a gecko. For the moment it can walk only on smooth surfaces, at a mere four centimeters per second, a fraction of the speed of its biological role model. The dry adhesive on Stickybot's toes isn't self-cleaning like the lizard's either, so it rapidly clogs with dirt. "There are a lot of things about the gecko that we simply had to ignore," Cutkosky says. Still, a number of real-world applications are in the offing. The Department of Defense's Defense Advanced Research Projects Agency (DARPA), which funds the project, has it in mind for surveillance: an automaton that could slink up a building and perch there for hours or days, monitoring the terrain below. Cutkosky hypothesizes a range of civilian uses. "I'm trying to get robots to go places where they've never gone before," he told me. "I would like to see Stickybot have a real-world function, whether it's a toy or another application. Sure, it would be great if it eventually has a lifesaving or humanitarian role..."

H For all the power of the biomimetics paradigm, and the brilliant people who practice it, bio-inspiration has led to surprisingly few mass-produced products and arguably only one household word—Velcro, which was invented in 1948 by Swiss chemist George de Mestral, by copying the way cockleburs clung to his dog's coat. In addition to Cutkosky's lab, five other high-powered research teams are currently trying to mimic gecko adhesion, and so far none has come close to matching the lizard's strong, directional, self-cleaning grip. Likewise, scientists have yet to meaningfully re-create the abalone nanostructure that accounts for the strength of its shell, and several well-funded biotech companies have gone bankrupt trying to make artificial spider silk.

Questions 1-7

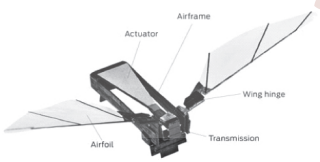
Do the following statements agree with the information given in Reading Passage 1?
In boxes 1-7 on your answer sheet, write

TRUE	*if the statement is true*
FALSE	*if the statement is false*
NOT GIVEN	*if the information is not given in the passage*

1 Andrew Parker failed to make effective water device which can be used in desert.
2 Skin of lizard is easy to get wet when it contacts water.
3 Scientists apply inspiration from nature into many artificial engineering.
4 Tiny and thin hair under gecko's feet allows it to stick to the surface of object.
5 When gecko climbs downward, its feet release a certain kind of chemical to make them adhesive.
6 Famous cases stimulate a large number of successful products of biomimetics in real life.
7 Velcro is well-known for its bionics design .

Questions 8-10

Filling the blanks below.
write **NO MORE THAN THREE WORDS AND/OR A NUMBER** from the passage for each question of robot below



Ronald Fearing was required to fabricate tiny components for his robotic fly in _____8_____by specialized techniques. The robotic fly's main structure outside is made of _____9_____ and long and thin wires which make it unlike fly at all.	Cutkosky applied an artificial material in stickybot's _____10_____ as a tendon to split pressure like lizard's does.

Questions 11-13

Fill the blanks below .
Write **NO MORE THAN THREE WORDS AND/OR A NUMBER** from the passage for each answer about facts of stickybot.

11 Stickybot's feet doesn't have _____function which makes it only be able to walk on smooth surface.

12 DARPA are planning to use stickybot for _____.

13 Cutkosky assume that stickybot finally has potential in _____ or other human-related activities.

SECTION 2

What happiness is?

A Economists accept that if people describe themselves as happy, then they are happy. However, psychologists differentiate between levels of happiness. The most immediate type involves a feeling; pleasure or joy. But sometimes happiness is a judgment that life is satisfying, and does not imply an emotional state. Esteemed psychologist Martin Seligman has spearheaded an effort to study the science of happiness. The bad news is that we're not wired to be happy. The good news is that we can do something about it. Since its origins in a Leipzig laboratory 130 years ago, psychology has had little to say about goodness and contentment. Mostly psychologists have concerned themselves with weakness and misery. There are libraries full of theories about why we get sad, worried, and angry. It hasn't been respectable science to study what happens when lives go well. Positive experiences, such as joy, kindness, altruism and heroism, have mainly been ignored. For every 100 psychology papers dealing with anxiety or depression, only one concerns a positive trait.

B A few pioneers in experimental psychology bucked the trend. Professor **Alice** Isen of Cornell University and colleagues have demonstrated how positive emotions make people think faster and more creatively. Showing how easy it is to give people an intellectual boost, Isen divided doctors making a tricky diagnosis into three groups: one received candy, one read humanistic statements about medicine, one was a control group. The doctors who had candy displayed the most creative thinking and worked more efficiently. Inspired by Isen and others, Seligman got stuck in. He raised millions of dollars of research money and funded 50 research groups involving 150 scientists across the world. Four positive psychology centres opened, decorated in cheerful colours and furnished with sofas and baby-sitters. There

and eat fajitas, then form "pods" to discuss subjects such as wonder and awe. A thousand therapists were coached in the new science.

C But critics are demanding answers to big questions. What is the point of defining levels of happiness and classifying the virtues? Aren't these concepts vague and impossible to pin down? Can you justify spending funds to research positive states when there are problems such as famine, flood and epidemic **depression** to be solved? Seligman knows his work can be belittled alongside trite notions such as "the power of positive thinking". His plan to stop the new science floating "on the waves of self- improvement fashions" is to make sure it is anchored to positive philosophy above, and to positive biology below.

D And this takes us back to our evolutionary past. Homo sapiens evolved during the Pleistocene era (1.8 m to 10,000 years ago), a time of hardship and turmoil. It was the Ice Age, and our ancestors endured long freezes as glaciers formed, then ferocious floods as the ice masses melted. We shared the planet with terrifying creatures such as mammoths, elephant-sized ground sloths and sabre-toothed cats. But by the end of the Pleistocene, all these animals were extinct. Humans, on the other hand, had evolved large brains and used their intelligence to make fire and sophisticated tools, to develop talk and social rituals. Survival in a time of adversity forged our brains into a persistent mould. Professor Seligman says: "Because our brain evolved during a time of ice, flood and famine, we have a catastrophic brain. The way the brain works is looking for what's wrong. The problem is, that worked in the Pleistocene era. It favoured you, but it doesn't work in the modern world."

E Although most people rate themselves as happy, there is a wealth of evidence to show that negative thinking is deeply ingrained in the human psyche. Experiments show that we remember failures more vividly than successes. We dwell on what went badly, not what went well. Of the six universal emotions, four anger, fear, disgust and sadness are negative and only one, joy, is positive. (The sixth, surprise, is

psychologist Daniel Nettle, author of Happiness, and one of the Royal Institution lecturers, the negative emotions each tell us "something bad has happened" and suggest a different course of action.

F What is it about the structure of the brain that underlies our bias towards negative thinking? And is there a biology of joy? At Iowa University, neuroscientists studied what happens when people are shown pleasant and unpleasant pictures. When subjects see landscapes or dolphins playing, part of the frontal lobe of the brain becomes active. But when they are shown unpleasant images a bird covered in oil, or a dead soldier with part of his face missing the response comes from more primitive parts of the brain. The ability to feel negative emotions derives from an ancient danger-recognition system formed early in the brain's evolution. The pre-frontal cortex, which registers happiness, is the part used for higher thinking, an area that evolved later in human history.

G Our difficulty, according to Daniel Nettle, is that the brain systems for liking and wanting are separate. Wanting involves two ancient regions the amygdala and the nucleus accumbens ( ) that communicate using the chemical dopamine to form the brain's reward system. They are involved in anticipating the pleasure of eating and in addiction to drugs. A rat will press a bar repeatedly, ignoring sexually available partners, to receive electrical stimulation of the "wanting" parts of the brain. But having received brain stimulation, the rat eats more but shows no sign of enjoying the food it craved. In humans, a drug like nicotine produces much craving but little pleasure.

H In essence, what the biology lesson tells us is that negative emotions are fundamental to the human condition, and it's no wonder they are difficult to eradicate. At the same time, by a trick of nature, our brains are designed to crave but never really achieve lasting happiness.

Questions 14-20

*The reading Passage has seven paragraphs **A-H**.*
Which paragraph contains the following information?
Write the correct letter ***A-H,*** in boxes ***14-20*** on your answer sheet.

14 An experiment involving dividing several groups one of which received positive icon

15 Review of a poorly researched psychology area

16 Contrast being made about the brains' action as response to positive or negative stimulus

17 The skeptical attitude toward the research seemed to be a waste of fund

18 a substance that produces much wanting instead of much liking

19 a conclusion that lasting happiness are hardly obtained because of the nature of brains

20 One description that listed the human emotional categories.

Questions 21-25

Complete the following summary of the paragraphs of Reading Passage，using ***no more than four*** words from the Reading Passage for each answer. Write your answers in boxes **21-25** on your answer sheet.

A few pioneers in experimental psychology study what happens when lives go well. Professor **Alice** divided doctors, making a tricky experiment, into three groups: beside the one control group, the other two either are asked to read humanistic statements about drugs, or received **21……..** The latter displayed the most creative thinking and worked more efficiently. Since critics are questioning the significance of the **22……** for both levels of happiness and classification for the virtues. Professor Seligman countered in an evolutional theory: survival in a time of adversity forged our brains into the way of thinking for what's wrong because we have **a 23……..**

There is bountiful of evidence to show that negative thinking is deeply built in the human psyche. Later, at Iowa University, neuroscientists studied the active parts in brains to contrast when people are shown pleasant and unpleasant pictures. When positive images like **24……** are shown, part of the frontal lobe of the brain becomes active. But when they are shown unpleasant image, the response comes from **25……** of the brain.

Questions 26

Choose the correct letter, **A, B, C** or **D**.
Write your answers in boxes 26 on your answer sheet.

according to Daniel Nettle in the last two paragraphs，what is true as the scientists can tell us about happiness

A Brain systems always mix liking and wanting together.
B Negative emotions can be easily rid of if we think positively.
C Happiness is like nicotine we are craving for but get little pleasure.
D The inner mechanism of human brains does not assist us to achieve durable happiness.

SECTION 3

The Power of Nothing

Geoff Watts, New Scientist (May26th, 2001)

A Want to devise a new form of alternative medicine? No problem. Here is the recipe. Be warm, sympathetic, reassuring and enthusiastic. Your treatment should involve physical contact, and each session with your patients should last at least half an hour. Encourage your patients to take an active part in their treatment and understand how their disorders relate to the rest of their lives. Tell them that their own bodies possess the true power to heal. Make them pay you out of their own pockets. Describe your treatment in familiar words, but embroidered with a hint of mysticism: energy fields, energy flows, energy blocks, meridians, forces, auras, rhythms and the like. Refer to the knowledge of an earlier age: wisdom carelessly swept aside by the rise and rise of blind, mechanistic science.Oh, come off it, you are saying. Something invented off the top of your head could not possibly work, could it?

B Well yes, it could – and often well enough to earn you a living. A good living if you are sufficiently convincing, or better still, really believe in your therapy. Many illnesses get better on their own, so if you are lucky and administer your treatment at just the right time you will get the credit. But that's only part of it. Some of the improvement really would be down to you. Your healing power would be the outcome of a paradoxical force that conventional medicine recognizes but remains oddly ambivalent about: the placebo effect.

C Placebos are treatments that have no direct effect on the body, yet still work because the patient has faith in their power to heal. Most often the term refers to a dummy pill, but it applies just as much to any device or procedure, from a sticking plaster to a crystal to an operation. The existence of the placebo effect implies that even quackery may confer real benefits, which is why any mention of placebo is a touchy subject for

many practitioners of complementary and alternative medicine, who are likely to regard it as tantamount to a charge of charlatanism. In fact, the placebo effect is a powerful part of all medical care, orthodox or otherwise, though its role is often neglected or misunderstood.

D One of the great strengths of CAM may be its practioners' skill in deploying the placebo effect to accomplish real healing. "Complementary practitioners are miles better at producing non-specific effects and good therapeutic relationships," says Edzard Ernst, professor of CAM at Exeter University. The question is whether CAM could be integrated into conventional medicine, as some would like, without losing much of this power.

E At one level, it should come as no surprise that our state of mind can influence our physiology: anger opens the superficial blood vessels of the face; sadness pumps the tear glands. But exactly how placebos work their medical magic is still largely unknown. Most of the scant research done so far has focused on the control of pain, because it’s one of the commonest compaints and lends itself to experimental study. Here, attention has turned to the dndorphins, morphine-like neurochemicals known to help control pain.

F But exactly how placebos work their medical magic is still largely unknown. Most of the scant research to date has focused on the control of pain, because it's one of the commonest complaints and lends itself to experimental study. Here, attention has turned to the endorphins, natural counterparts of morphine that are known to help control pain. "Any of the neurochemicals involved in transmitting pain impulses or modulating them might also be involved in generating the placebo response," says Don Price, an oral surgeon at the University of Florida who studies the placebo effect in dental pain.

G "But endorphins are still out in front."That case has been strengthened by the recent work of Fabrizio Benedetti of the University of Turin, who showed that the placebo effect can be abolished by a drug, naloxone, which blocks the effects of endorphins. Benedetti induced pain in human volunteers by inflating a blood-pressure cuff on the forearm. He did this several times a day for several days, using morphine each time to control the pain. On the final day, without saying anything, he replaced the morphine with a saline solution. This still relieved the subjects' pain: a placebo effect. But when he added naloxone to the saline the pain relief disappeared. Here was direct proof that placebo analgesia is mediated, at least in part, by these natural opiates.

H Still, no one knows how belief triggers endorphin release, or why most people can't achieve placebo pain relief simply by willing it. Though scientists don't know exactly how placebos work, they have accumulated a fair bit of knowledge about how to trigger the effect. A London rheumatologist found, for example, that red dummy capsules made more effective painkillers than blue, green or yellow ones. Research on American students revealed that blue pills make better sedatives than pink, a colour more suitable for stimulants. Even branding can make a difference: if Aspro or Tylenol are what you like to take for a headache, their chemically identical generic equivalents may be less effective.

I It matters, too, how the treatment is delivered. Decades ago, when the major tranquilliser chlorpromazine was being introduced, a doctor in Kansas categorised his colleagues according to whether they were keen on it, openly sceptical of its benefits, or took a "let's try and see" attitude . His conclusion: the more enthusiastic the doctor, the better the drug performed. And this year Ernst surveyed published studies that compared doctors' bedside manners. The studies turned up one consistent finding: "Physicians who adopt a warm, friendly and reassuring manner," he reported, "are more effective than those whose consultations are formal and do not offer reassurance."

J Warm, friendly and reassuring are precisely CAM's strong suits, of course. Many of the ingredients of that opening recipe -- the physical contact, the generous swathes of time, the strong hints of supernormal healing power -- are just the kind of thing likely to impress patients. It's hardly surprising, then, that complementary practitioners are generally best at mobilising the placebo effect, says Arthur Kleinman, professor of social anthropology at Harvard University.

Questions 27-32

Use the information in the passage to match the deed (listed A-H) with people below.

Write the appropriate letters A-H in boxes 27-32 on your answer sheet.

NB you may use any letter more than once

A **Should easily be understood**
B **should improve by itself**
C **Should not involve any mysticism**
D **Ought to last a minimum length of time.**
E **Needs to be treated at the right time.**
F **Should give more recognition.**
G **Can earn valuable money.**
H **Do not rely on any specific treatment**

27 Appointments with alternative practitioner
28 An alternative practitioner's description of treatment
29 An alternative practitioner who has faith in what he does
30 The illness of patients convinced of alternative practice
31 Improvements of patients receiving alternative practice
32 Conventional medical doctors (who is aware of placebo)

Questions 33-35

Choose the correct letter, **A, B, C** or **D**.
Write your answers in boxes 33-35 on your answer sheet.

33 In the fifth paragraph, the writer uses the example of ***anger and sadness*** to illustrate that:

A People's feeling could affect their physical behaviour
B Scientists don't understand how the mind influences the body.
C Research on the placebo effect is very limited
D How placebo achieves its effect is yet to be understood.

34 Research on pain control attracts most of the attention because

A Scientists have discovered that endorphins can help to reduce pain.
B Only a limited number of researchers gain relevant experience
C Pain reducing agents might also be involved in placebo effect.
D Patients often experience pain and like to complain about it

35 *Fabrizio Benedetti*'s research on endorphins indicates that

A They are widely used to regulate pain.
B They can be produced by willful thoughts
C They can be neutralized by introducing naloxone.
D Their pain-relieving effects do not last long enough.

Questions 36-40

Do the following statements agree with the information given in Reading Passage **3**?
*In boxes **36-40** 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*

36 There is enough information for scientists to fully understand the placebo effect.
37 A London based researcher discovered that red pills should be taken off the market.
38 People's preference on brands would also have effect on their healing.
39 Medical doctors have a range of views of the newly introduced drug of ***chlopromazine***.

40 Alternative practitioners are seldom known for applying placebo effect.

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