ACADEMIC READING
Reading passage 1 Spend 20 minutes

Health In The Wild

Many animals seem able to treat their illnesses themselves. Humans may have a thing or two to learn from them. For the past decade Dr Engel,a lecturer in environmental sciences at Britain's Open University, has been collating examples of self-medicating behaviour in wild animals. She recently published a book on the subject. In a talk at the Edinburgh Science Festival earlier this month, she explained that the idea that animals can treat themselves has been regarded with some scepticism by her colleagues in the past. But a growing number of animal behaviourists now think that wild animals can and do deal with their own medical needs. One example of self-medication was discovered in 1987. Michael Huffman and Mohamedi Seifu, working in the Mahale Mountains National Park in Tanzania, noticed that local chimpanzees suffering from intestinal worms would dose themselves with the pith of a plant called Veronia. This plant produces poisonous chemicals called terpenes. Its pith contains a strong enough concentration to kill gut parasites, but not so strong as to kill chimps(nor people, for that matter; locals use the pith for the same purpose). Given that the plant is known locally as "goat killer", however, it seems that not all animals are as smart as chimps and humans. Some consume it indiscriminately, and succumb. Since the Veronia-eating chimps were discovered, more evidence has emerged suggesting that animals often eat things for medical rather than nutritional reasons. Many species, for example, consume dirt—a behaviour known as geophagy. Historically, the preferred explanation was that soil supplies minerals such as salt. But geophagy occurs in areas where the earth is not a useful source of minerals, and also in places where minerals can be more easily obtained from certain plants that are known to be rich in them. Clearly, the animals must be getting something else out of eating earth. The current belief is that soil—and particularly the clay in it—helps to detoxify the defensive poisons that some plants produce in an attempt to prevent themselves from being eaten. Evidence for the detoxifying nature of clay came in 1999, from an experiment carried out on macaws by James Gilardi and his colleagues at the University of California, Davis. Macaws eat seeds containing alkaloids, a group of chemicals that has some notoriously toxic members, such as strychnine. In the wild, the birds are frequently seen perched on eroding riverbanks eating clay. Dr Gilardi fed one group
of macaws a mixture of harmless alkaloid and clay, and a second group just the alkaloid. Several hours later, the macaws that had eaten the clay had 60% less alkaloid in their bloodstreams than those that had not, suggesting that the hypothesis is correct.

Other observations also support the idea that clay is detoxifying. Towards the tropics the amount of toxic compounds in plants increases-and so does the amount of earth eaten by herbivores. Elephants lick clay from mud holes all year round, except in September when they are bingeing on fruit which, because it has evolved to be eaten, is not toxic. And the addition of clay to the diets of domestic cattle increases the amount of nutrients that they can absorb from their food by 10-20%.

A third instance of animal self-medication is the use of mechanical scours to get rid of gut parasites, in 1972 Richard Wrangham, a researcher at the Gombe Stream Reserve in Tanzania, noticed that chimpanzees were eating the leaves of a tree called Aspilia. The chimps chose the leaves carefully by testing them in their mouths. Having chosen a leaf, a chimp would fold it into a fan and swallow it. Some of the chimps were noticed wrinkling their noses as they swallowed these leaves, suggesting the experience was unpleasant. Later, undigested leaves were found on the forest floor.

Dr Wrangham rightly guessed that the leaves had a medicinal purpose—this was, indeed, one of the earliest interpretations of a behaviour pattern as self-medication. However, he guessed wrong about what the mechanism was. His (and everybody else's) assumption was that Aspilia contained a drug, and this sparked more than two decades of phytochemical research to try to find out what chemical the chimps were after. But by the 1990s, chimps across Africa had been seen swallowing the leaves of 19 different species that seemed to have few suitable chemicals in common. The drug hypothesis was looking more and more dubious.

It was Dr Huffman who got to the bottom of the problem. He did so by watching what came out of the chimps, rather than concentrating on what went in. He found that the egested leaves were full of intestinal worms.The factor common to all 19 species of leaves swallowed by the chimps was that they were covered with microscopic hooks. These caught the worms and dragged them from their lodgings.

Following that observation, Dr Engel is now particularly excited about how knowledge of the way that animals look after themselves could be used to improve the health of live-stock. People

might also be able to learn a thing or two, and may, indeed, already have done so. Geophagy, for example, is a common behaviour in many parts of the world The medical stalls in African markets frequently sell tablets made of different sorts of clays, appropriate to different medical conditions. Africans brought to the Americas as slaves continued this tradition, which gave their owners one more excuse to affect to despise them. Yet, as Dr Engel points out, Rwanda mountain gorillas eat a type of clay rather similar to kaolinite- the main ingredient of many patent medicines sold over the counter in the West for digestive complaints. Dirt can sometimes be good for you, and to be “as sick as a parrot” may, after all, be a state to be desired.

Questions 1-4

Do the following statements agree with the information given in Reading Passage 1?
Write:
TRUE- if the statement agrees with the information
FALSE- if the statement contradicts the information
NOT GIVEN- if there is no information on this
1. Dr. Engel has been working on animal self-medication research for 10 years. 2. Animals often walk a considerable distance to find plants for medication. 3. Birds, like Macaw, often eat clay because it is part of their natural diet. 4. According to Dr. Engel, research into animal self-medication can help to invent new painkillers.

Questions 5-9

Complete the notes below using **NO MORE THAN ONE WORD OR NUMBER** from the passage.

Date	Name	Animal	Food	Mechanism
1987	Michael Huffman and Mohamedi Seifu	Chimpanzee	5…of Veronia	Contained chemicals, 6…… that can kill parasites
1999	James Gilardi and his colleagues	Macaw	Seeds	(contain Clay can 7……) and clay 8…….. the poisonous contents in food
1972	Richard Wrangham	Chimpanzee	Leaves with tiny Such leaves	9 …….on can catch and Surface expel worms from intestines

Questions 10-13

Complete the summary below using words from the box. Write your answers, A-H, in boxes 10-13 on your answer sheet.

Though often doubted, the self-medicating behavior of animals has been supported by an increasing amount of evidence. One piece of evidence particularly deals with 10……, a soil-consuming behavior commonly found across animal species, because earth, often clay, can neutralize the 11……..content of their diet. Such behavior can also be found among humans in Africa, where people purchase 12……at market stalls as a kind of medication to their illnesses. Another example of this is found in chimps eating leaves of often 13……taste but with no apparent medicinal value until its unique structure came into light. A mineral

B plants
C unpleasant
D toxic
E clay tablets
F nutritional
G geophagy H harmless

Reading Passage 2 Spend 20 minutes

The Conquest of Malaria in Italy, 1900-1962

Mal-aria. Bad air. Even the word is Italian, and this horrible disease marked the life of those in the peninsula for thousands of years. Yet by 1962, Italy was officially declared malaria-free, and it has remained so ever since. Frank Snowden's study of this success story takes us to areas historians have rarely visited before.

A. Everybody now knows that malaria is carried by mosquitoes. But in the 19th century, most experts believed that the disease was produced by "miasma" or "poisoning of the air". Others made a link between swamps, water and malaria, but did not make the further leap towards insects. The consequences of these theories were that little was done to combat the disease before the end of the century. Things became so bad that 11m Italians (from a total population of 25m) were "permanently at risk". In malarial zones the life expectancy of land workers was a terrifying 22.5 years. Those who escaped death were weakened or suffered from splenomegaly — a "painful enlargement of the spleen" and "a lifeless stare". The economic impact of the disease was immense. Epidemics were blamed on southern Italians, given the widespread belief that malaria was hereditary. In the 1880s, such theories began to collapse as the dreaded mosquito was identified as the real culprit.

B. Italian scientists, drawing on the pioneering work of French doctor Alphonse Laveran, were able to predict the cycles of fever but it was in Rome that further key discoveries were made. Giovanni Battista Grassi, a naturalist, found that a particular type of mosquito was the carrier of
malaria. By experimenting on healthy volunteers (mosquitoes were released into rooms where they drank the blood of the human guinea pigs), Grassi was able to make the direct link between the insects (all females of a certain kind) and the disease. Soon, doctors and scientists made another startling discovery: the mosquitoes themselves were also infected and not mere carriers. Every year, during the mosquito season, malarial blood was moved around the population by the insects. Definitive proof of these new theories was obtained after an extraordinary series of experiments in Italy, where healthy people were introduced into malarial zones but kept free of mosquito bites — and remained well. The new Italian state had the necessary information to tackle the disease.

C. A complicated approach was adopted, which made use of quinine - a drug obtained from tree bark which had long been used to combat fever, but was now seen as a crucial part of the war on malaria. Italy introduced a quinine law and a quinine tax in 1904, and the drug was administered to large numbers of rural workers. Despite its often terrible side-effects (the headaches produced were known as the "quinine-buzz") the drug was successful in limiting the

spread of the disease, and in breaking cycles of infection. In addition, Italy set up rural health centres and invested heavily in education programmes. Malaria, as Snowden shows, was not just a medical problem but a social and regional issue, and could only be defeated through multi-layered strategies. Politics was itself transformed by the anti malarial campaigns. It was originally decided to give quinine to all those in certain regions – even healthy people; peasants were often suspicious of medicine being forced upon them. Doctors were sometimes met with hostility and refusal, and many were dubbed "poisoners".

D. Despite these problems, the strategy was hugely successful. Deaths from malaria fell by some 80% in the first decade of the 20th century and some areas escaped altogether from the scourge of the disease. War, from 1915-18, delayed the campaign. Funds were diverted to the battlefields and the fight against malaria became a military issue, laying the way for the fascist approach to the problem. Mussolini's policies in the 20s and 30s are subjected to a serious cross-examination by Snowden. He shows how much of the regime's claims to have "eradicated" malaria through massive land reclamation, forced population removals and authoritarian clean-ups were pure propaganda. Mass draining was instituted — often at a great cost as Mussolini waged war not on the disease itself, but on the mosquitoes that carried it. The cleansing of Italy was also ethnic, as "carefully selected" Italians were chosen to inhabit the gleaming new towns of the former marshlands around Rome. The "successes" under fascism were extremely vulnerable, based as they were on a top-down concept of eradication. As war swept through the drained lands in the 40s, the disease returned with a vengeance. E. In the most shocking part of the book, Snowden describes — passionately, but with the skill of a great historian — how the retreating Nazi armies in Italy in 1943-44 deliberately caused a massive malaria epidemic in Lazio. It was "the only known example of biological warfare in 20th-century Europe". Shamefully, the Italian malaria expert Alberto Missiroli had a role to play in the disaster: he did not distribute quinine, despite being well aware of the epidemic to come. Snowden claims that Missiroli was already preparing a new strategy — with the support of the US Rockefeller Foundation — using a new pesticide, DDT Missiroli allowed the epidemic to spread, in order to create the ideal conditions for a massive, and lucrative, human experiment. Fifty-five thousand cases of malaria were recorded in the province of Littoria alone in 1944. It is estimated that more than a third of those in the affected area contracted the disease. Thousands, nobody knows how many died. With the war over, the US government and the Rockefeller Foundation were free to experiment. DDT was sprayed from the air and 3m Italians had their bodies covered with the chemical. The effects were dramatic, and nobody really cared about the toxic effects of the chemical.

F. By 1962, malaria was more or less gone from the whole peninsula. The last cases were noted in a poor region of Sicily. One of the final victims to die of the disease in Italy was the popular cyclist, Fausto Coppi. He had contracted malaria in Africa in 1960, and the failure of doctors in the north of Italy to spot the disease was a sign of the times. A few decades earlier they would have immediately noticed the tell-tale signs; it was later claimed that a small dose of quinine would have saved his life. As there are still more than 1m deaths every year from malaria worldwide, Snowden's book also has contemporary relevance. This is a disease that affects every level of the societies where it is rampant. It also provides us with "a message of hope for a world struggling with the great present-day medical emergency"

Questions 14-18
Complete the summary below using **NO MORE THAN TWO WORDS** from the passage. Write your answers in boxes 14-18 on your answer sheet. Before the link between malaria and 14……was established, there were many popular theories circulating among the public, one of which points to 15……., the unclean air. The lack of proper treatment affected the country so badly that rural people in malaria infested places had extremely short 16……. The disease spread so quickly, especially in the south of Italy, thus giving rise to the idea that the disease was 17……People believed in these theories until the mosquito was found to be the 18……..in the 1880s.

Questions 19-21
Do the following statements agree with the information given in Reading Passage 2?
Write :
TRUE- if the statement agrees with the information
FALSE- if the statement contradicts the information
NOT GIVEN -if there is no information on this

19 The volunteers of the Italian experiments that provided assuring evidence were from all over Italy.
20 It's possible to come out of malarial zones alive.
21 The government successfully managed to give all people quinine medication.

Questions 22-26
Reading Passage 2 has six paragraphs, A-F. Which paragraph contains the following information? Write the correct letter, A-F, in boxes 22-26 on your answer sheet. 22 A breakthrough in the theory of the cause of malaria
23 A story for today's readers
24 A description of an expert who didn't do anything to restrict the spread of disease
25 A setback in the battle against malaria due to government policies
26 A description of how malaria affects the human body
Reading Passage 3 Spend 20 minutes

Sunset for the Oil Business?

The world is about to run out of oil. Or perhaps not. It depends whom you believe... Members of Oil Depletion Analysis Centre (ODAC) recently met in London and presented technical data that support their grim forecast that the world is perilously close to running out of oil. Leading lights of this movement, including Colin Campbell, rejected rival views presented by American Geological Survey and the International Energy Agency (IEA) that contradicted their views. Dr Campbell even decried the "amazing display of ignorance, deliberate ignorance, denial and obfuscation" by governments, industry and academics on this topic.
So is the oil really running out? The answer is easy: Yes. Nobody seriously disputes the notion that oil is, for all practical purposes, a non-renewable resource that will run out some day, be

that years or decades away. The harder question is determining when precisely oil will begin to get scarce. And answering that question involves scaling Hubbert's peak. M. King Hubbert, a Shell geologist of legendary status among depletion experts, forecast in 1956 that oil production in the United States would peak in the early 1970s and then slowly decline, in something resembling a bell-shaped curve. At the time, his forecast was controversial, and many rubbished it. After 1970, however, empirical evidence proved him correct: oil production in America did indeed peak and has been in decline ever since. Dr Hubbert's analysis drew on the observation that oil production in a new area typically rises quickly at first, as the easiest and cheapest reserves are tapped. Over time, reservoirs age and go into decline, and so lifting oil becomes more expensive. Oil from that area then becomes less competitive in relation to other sources of fuel. As a result, production slows down and usually tapers off and declines. That, he argued, made for a bell-shaped curve.

His successful prediction has emboldened a new generation of geologists to apply his methodology on a global scale. Chief among them are the experts at ODAC, who worry that the global peak in production will come in the next decade. Dr Campbell used to argue that the peak should have come already; he now thinks it is just round the corner. A heavyweight has now joined this gloomy chorus. Kenneth Deffeyes of Princeton University argues in a lively new book that global oil production could peak within the next few years.

That sharply contradicts mainstream thinking. America's Geological Survey prepared an exhaustive study of oil depletion last year that put the peak of production some decades off. The IEA has just weighed in with its new “World Energy Outlook" which foresees enough oil to comfortably meet demand to 2020 from remaining reserves. Rene Dahan, one of ExxonMobil's top managers, goes further: with an assurance characteristic of the world’s largest energy company, he insists: that the world will be awash in oil for another 70 years. Who is right? In making sense of these wildly opposing views, it is useful to look back at the pitiful history of oil forecasting. Doomsters have been predicting dry wells since the 1970s, but so far the oil is still gushing Nearly all the predictions for 2000 made after the 1970s oil shocks were far too pessimistic.

Michael Lynch of DRI-WEFA, an economic consultancy, is one of the few oil forecasters who has got things generally right. In a new paper, Dr Lynch analyses those historical forecasts. He
finds evidence of both bias and recurring errors, which suggests that methodological mistakes (rather than just poor data) were the problem. In particular, he criticized forecasters who used Hubbert-style analysis for relying on fixed estimates of how much “ultimately recoverable" oil there really is below ground. That figure, he insists, is actually a dynamic one, as improvements in infrastructure, knowledge and technology raise the amount of oil which is recoverable. That points to what will probably determine whether the pessimists or the optimists are right: technological innovation. The first camp tends to be dismissive of claims of forthcoming technological revolutions in such areas as deep-water drilling and enhanced recovery. Dr Deffeyes captures this end-of technology mindset well. He argues that because the industry has already spent billions on technology development, it makes it difficult to ask today for new technology, as most of the wheels have already been invented.

Yet techno-optimists argue that the technological revolution in oil has only just begun. Average recovery rates (how much of the known oil in a reservoir can actually be brought to the surface)

are still only around 30-35%. Industry optimists believe that new techniques on the drawing board today could lift that figure to 50-60% within a decade.
Given the industry's astonishing track record of innovation, it may be foolish to bet against it. That is the result of adversity: the oil crisis of the 1970s forced Big Oil to develop reserves in expensive, inaccessible places such as the North Sea and Alaska, undermining Dr Hubbert's assumption that cheap reserves are developed first. The resulting upstream investments have driven down the cost of finding and developing wells over the last two decades from over $20 a barrel to around $6 a barrel. The cost of producing oil has fallen by half, to under $4 a barrel. Such miracles will not come cheap, however, since much of the world's oil is now produced in ageing fields that are rapidly declining. The IEA concludes that global oil production need not peak in the next two decades if the necessary investments are made. So how much is necessary? If oil companies are to replace the output lost at those ageing fields and meet the world's ever-rising demand for oil, the agency reckons they must invest $1 trillion in l non-OPEC countries over the next decade alone. Ouch.

Questions 27-31

Do the following statements agree with the information given in Reading Passage 3?
YES- if the statement agrees with the information
NO -if the statement contradicts the information
NOT GIVEN - if there is no information on this

27. Hubbert has a high-profile reputation amongst ODAC members. 28. Oilis likelyto last longer than some other energy sources. 29. The majority of geologists believe that oil will start to run out some time this decade.
30. Over 50 percent of the oil we know about is currently being recovered.
31. History has shown that some of Hubbert's principles were mistaken.

Questions 32-35

Complete the sentences below using NO MORE THAN ONE WORD OR NUMBER from the passage. Write your answers in boxes 32-35 on your answersheet. Many people believed Hubbert's theory was 32…….when it was originally presented.

When a new oilfield is 33_____ , it is easy to rise.
The recovery of the oil gets more 34_____, as the reservoir gets older.
The oilfield can’t be as 35_____ as other areas.

Questions 36-40

Look at the following statements (Questions 36-40) and the list of people below. Match each statement with the correct person, A-E. Write the correct letter, A-E, in boxes 36-40 on your answer sheet. '
36. Has found fault in geological research procedure.
37. Has provided the longest-range forecast regarding oil supply.

38. Has convinced others that oil production will follow a particular model.
39. Has accused fellow scientists of refusing to see the truth.
40. Has expressed doubt over whether improved methods of extracting oilare possible.

A Colin Campbell
B M. King Hubbert
C Kenneth Deffeyes
D Rene Daha
E Michael Lynch