I. ĐỀ 1

1. READING PASSAGE 1

Amazon Rainforest of Peru

A

A cement maker proudly speaks about the brief history of the road: this main road was part of an incentive programme supported by the US's fund to help local people to find economic alternatives to harvesting coca, from which cocaine is produced. Four years later, the road is a global vacuum from which timber from the Peruvian rainforest is taken to China. Some wood will be polished into luxury parquet flooring for high-quality homes in Shanghai and Beijing. More wood will be used in Chinese factories and made into patio furniture, decking or flooring in North America and Europe.

B

Going down the street, muddy tracks show the old forest known as *Monte Alto*, where local farmers have been using the sunlight that comes through the openings in the forest canopy to grow a variety of food crops, like cassava, sweet potatoes, bananas and plantains. They are also growing a few cash crops like coffee and cacao. This also helps to fund essential services like schools and hospitals.

C

As a tree ecologist and student studying about the timber trade, I am here researching a kind of Dipteryx known in the region as shihuahuaco (its international trade name is cumaru) and to research its movements from the Amazonian forest to Chinese factories. Although shihuahuaco is not particularly high profile, ecologists call it a "keystone" tree, as its large seeds are an essential food source for forest herbivores in the dry season, whilst its hollow rooms are utilized as the nesting place of

parrots and macaws. It is so hard that local residents use big shihuahuaco trees as a shelter when strong storms bring trees down.

D

My trip began in the company of a great group of people who were logging from the sawmill town in Pucallpa. A two-day trip into the forest guided us beyond the road's end to a community called Esperanza, or "Hope." In the middle of a flourishing Chacra – a farm typical of the area – there was a temporary logging camp. As well as their productive farming, the chacra had a family business called the Medinas which offered a refuge for birds, wild piglets and primates saved from logged areas. From there, I walked through the *Monte Alto* with my logging friends for 10 days, which they were soon to cut.

The adult trees were colossal, reaching heights of up to 50 metres and a width of 1.3 metres, towering above their huge buttresses which spread up to 5 metres around the main trunk. There were one or two such trees per hectare and most of them were put forward for the long voyage across the Pacific. Whilst we found approximately 250 seedlings and saplings, there were only two young trees which had reached the canopy and therefore could be expected to harvest into adults.

F

I don't want to be sentimental about trees. On one of my last nights in the rainforest when speaking to the company's chief woodsman Pedro, I felt reassured about the situation. Pedro said, "At least there are the Medias arbolitos." "What, little trees?" I asked. The next day Pedro showed me the trees he was referring to. We walked up the hill and Pedro stopped in front of a very healthy-looking young shihuahuaco growing in the sun. "When do you expect to harvest them?" I had to ask. I hope he wasn't planning to profile them in a few years.

Questions 1-3

Choose **THREE** letters, **A-F**.
*Write your answers in boxes **1-3** on your answer sheet.*
The list below gives some features of shihuahuaco.
Which **THREE** ways are mentioned by the writer of the text?

A a field to grow varied sustainable food crops
B a habitat for parrots and macaws
C a shelter for natives against a natural disaster
D a village of palm-thatch houses
E a road to help local people in finding economic alternatives
F an ecologist named it a keystone tree

Questions 4-6

Answer the questions below, using **NO MORE THAN TWO WORDS** from the passage for each answer.
*Write your answers in boxes **4-6** on your answer sheet.*
4 What is the name given to the old forest of the Amazon?
5 What is the international trade name of shihuahuaco?
6 What is the typical farmland area that is used as a temporary logging camp?

Questions 7-13

Reading Passage 1 has six paragraphs labeled **A-F**.
Which paragraph contains the following information?
*Write the correct letter **A-F** in boxes **7-13** on your answer sheet.*
NB *You may use any letter more than once*.

7 the self-rescue measures there to cover essentials
8 the dimensions of timber
9 the road sponsored by the United States' fund to aid relief work schemes
10 an anecdote for the writer
11 a short camping trip of the writer
12 practical sides of shihuahuaco
13 the export of timber

2. READING PASSAGE 2

A shot for public health

A

Millions of elderly people in the US, Europe and elsewhere get injections for their annual flu shots this month. It is widely seen as a largely effective public health programme which halves the risk of dying over the winter among people aged 65 or over. Actually, for every 200 vaccinations, one life is saved. However, there is overwhelming evidence that this claim is too good to be true, and we must look for additional ways to prevent the flu.

B

According to the US Centre for Disease Control and Prevention (CDC), flu kills approximately 36,000 people every winter in the US. Of them, about 30,000 are aged 65 or over. This is about 5% of the 650,000 winter deaths per year in this age group. Flu itself is never recorded as a cause of death: instead, it leads to the elderly dying from other causes, like bacterial pneumonia, heart disease or a stroke.

C

Most rich countries are concentrated on cutting this figure by vaccinating those who are at the highest risk, but how well does this actually work? The best way to carry out research in trials that compare those who are vaccinated against those who aren't, with applicants allocated randomly from each group. But as flu shots are known to be an advantage, it would be unethical to deny some people vaccinations. Researchers compared those who choose to be vaccinated with those who don't. then, they use the statistical methods of control to observe the differences between the two groups. One large meta-analysis of such

studies concluded that those who get flu shots are half as likely to die as their unvaccinated peers over the winter. Several other studies have come to a similar conclusion.

D

It sounds possibly a bit too good to be true. In 2005, Lone Simonsen, a researcher at George Washington University, and her colleagues showed that the number of flu deaths among the elderly in the US has remained at about 5% of deaths in the group during winter. Vaccination coverage has skyrocketed from about 15% in 1980 to about 70% today. So how could flu vaccination be preventing half of the deaths in winter, when the flu accounted for only 5% of those deaths back in 1980, when most people were not vaccinated?

E

Also, in 2006 epidemiologist Lisa Jackson and her colleagues at the Centre for Health Statistics in Seattle analysed a Seattle medical database using the same statistical methods as the previous studies. It showed that the maximum benefit of having the flu shot happened in the months before the season of flu even started.

F

Jackson insisted that the studies failed to give an account of ill and weak elderly people who had died but were less inclined to be vaccinated, making vaccination seem more valuable than it actually is.

G

But the debate was not over. Last year Kristin Nichol and her colleagues from the University of Minnesota published a dissertation using slightly different statistical methods and included records from tens of thousands of patients in three cities over 10 years. It came to the same incredible conclusion that vaccination was preventing about half of all deaths in winter. Researchers like Simonsen, Jackson and myself estimated Nichol's methods. Also, we believe this finding is subject to the sort of bias already identified by Jackson.

H

Last week Simonsen and Nichol discussed the issue at the Interscience Conference on Antimicrobial Agents and Chemotherapy in Washington DC. Nichol accepted that although there might still be some bias in her latest survey, flu deaths are estimated indirectly, especially when counting extra deaths beyond those expected in winter. Researchers may have underestimated the number of people who have died as a result of the flu.

I

In conclusion, we need to improve our statistical methods for measuring the effectiveness of the flu vaccine. This issue has much wider implications as similar methods are used to analyse other areas in which randomised trials are not possible. For example, the effectiveness of cholesterol-lowering statins for pneumonia patients is also analysed in this way.

Questions 14-20

Do the following statements reflect the claims of the writer in Reading Passage 2?
In boxes **14-20** on your answer sheet, 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

14 About 3,600 people are dying from the flu every winter in the US.
15 Although flu itself is seldom a disease that causes death, it can make people age quicker.
16 Lots of rich countries have successfully carried out a high-quality vaccination programme.
17 Flu shots should be useful for prescription but it may be immoral to hold back vaccination.
18 From meta-analysis, those who get the flu shot are fifty per cent less likely to die than their unvaccinated peers.
19 Lone Simonsen indicated how many people died from flu among the young.
20 The time for the highest level of efficacy of the flu shot turned out within the weeks previous to the flu season.

Questions 21-25

Classify the following statements as being

A US Centre for Disease Control and Prevention (CDC)
B George Washington University in Washington DC
C Centre for Health Statistics in Seattle
D University of Minnesota in Minneapolis

*Write the appropriate letters **A-D** in boxes **21-25** on your answer sheet.*
NB *You may use any letter more than once.*
21 Vaccination extent has maximised.
22 Seattle medical database was analysed using a statistical method.
23 Around 83 per cent of flu-related fatalities is in the over-65 age group.
24 Vaccination was able to prevent about fifty per cent of all winter deaths.
25 The flu deaths account for five per cent of annual winter deaths in the age group of 65 or over.

Questions 26-27

Answer the questions below with words taken from Reading Passage 2.
Use **ONE** or **TWO WORDS** for each answer.
Write your answers in boxes **26** and **27** on your answer sheet.
26 What is ONE of several diseases recorded as a cause of death if the elderly have the flu?
27 What percentage of the vaccination coverage is recently maximised by the research of Lone Simonsen?

3. READING PASSAGE 3

High-tech Switzerland

A

For a nation with a history of making sophisticated clocks, it is not surprising that Switzerland is the best place for precision and high-tech research. The country is so proud of two Federal Institutes of Technology, like the CERN of particle physics laboratory and a core of IBM research facilities. Also, there are two big pharmaceutical companies called Roche and Novartis. Also, who can forget Switzerland's world-famous chocolate industry?

B

British citizens are able to work in Switzerland vise-free and the country offers salaries of up to £72,000 per year for highly-skilled experienced researchers with the option of skiing in the lunch break. It is easy to know why Switzerland appeals to so many. In what fields are these great opportunities available?

C

Computing Clout

IBM is one of the global companies that has established a research hub in Switzerland. The Ruschlikon lab located in the south of Zurich draws researchers from around the world, with 80% of them coming from abroad.

D

This lab is a leader in digital storage technology and semiconductor and optical electronics for online networks. Projects to build a top-class nanotechnology research centre in the place are going on and will be completed by 2014.

E

Irene Holenweger Koeb, a manager in IBM human resources, says that the lab is looking for a wide range of disciplines including physics, chemistry and mathematics. Also, it is a thriving bioscience group working on the application of nanotechnology to life sciences and other areas. Most of the positions only accept applicants with a Ph.D. but the lab also hires approximately 100 applicants with Bachelors and Masters degrees each year.

F

Paul Hurley, a researcher in IBM's systems software group, in enjoying the flexible atmosphere of his work. There is a relaxed atmosphere in the office at IBM and meetings often take place over lunch or a coffee break.

G

As a lot of employees are not Swiss nationals, the company offers a lot of support and also has a policy of paying relocation expenses. Koeb says that it is important to gradually ease employees into their new workplace.

H

German lessons which are paid for by IBM are offered to new employees working in Zurich. The standard of German is different to German spoken in Zurich. Whilst Hurley has attended the classes, he says a little bit more practice is needed to notice the "Swiss-isms."

I

Raising the Chocolate Bar

Switzerland is known for chocolate. Jose Rubio of Lindt's human resources department says "Our company has 44 nationalities and 18 languages."

J

Scientists are able to find jobs within quality management, research and development and in the factory working conditions. The work of R&D is to help improve new recipes and products as well as designing and building new machines for making them. You are able to hone your skills in a well-managed company and have the pleasant task of testing the products to make sure they meet the company's high standards.

K

Rubio says that a foreign staff must speak at least one of the official Swiss languages. Most of the positions need a good level of German, as it is vital when working with Swiss coworkers in the production lines.

The ETH in German-speaking Zurich has a sister institution, which is the Federal Institute of Technology in French-speaking Lausanne (EPFL). With over 250 research groups and 10,000 students and faculties, it is focused on interdisciplinary scientific research. The institute's technology transfer programmes ensure that practical tools and methods make it out of the lab and into the industry.

Questions 28-30

Choose the appropriate letters **A-D** and write them in boxes **28-30** on your answer sheet.

28 Ruschlikon lab located in Zurich attracts

A almost 80 per cent of research staff from overseas.
B 80 per cent of research staff domestically.
C at least 80 per cent of engineers from abroad.
D 80 per cent of staff with a PhD from overseas.

29 The lab has a plan to complete in 2014

A founding a top-class Ruschlikon lab.
B making a world-famous chocolate industry.
C founding the best nanotechnology research centre.
D researching digital storage marketing.

30 According to information in the text, the main purpose of the writer is

A to survey various high-tech research in Switzerland.
B to introduce attractive research centres in Switzerland.
C to recruit a variety of human resources in Switzerland.
D to understand the world-famous chocolate in Switzerland.

Questions 31-35

Complete the summary below.
Choose **NO MORE THAN TWO WORDS** from Reading Passage 3 for each answer.
*Write your answers in boxes **31-35** on your answer sheet.*

Raising the chocolate bar

Switzerland is familiar with **31**……., attracted scientists in quality management, research and development. Those working in R&D aid to improve new versions of recipes, products and design and build **32**…….. Foreign staff should fluently speak one of **33**……. official tongues in the least. Especially, a number of workplaces need to have an advanced level of **34**……. With over 250 research groups and 10,000 students and faculties, it emphasizes **35**……. Scientific research.

Questions 36-40

Do the following statements reflect the claims of the writer in Reading Passage 3?
In boxes **36-40** on your answer sheet, 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

36 Switzerland has a reputation for the history of making precise clockwork.
37 Coffee in Switzerland is world-famous.
38 Four-fifths of the staff at the Ruschlikon in Zurich are from overseas.
39 The Ruschlikon lab is a trailblazer in only the field of semiconductors in digital storage technology.
40 Most study fields need a high level of English.

II. ĐỀ 2

1. READING PASSAGE 1

THE SWINE FLU PANDEMIC

A

The swine flu pandemic has become more problematic. The White House will meet with state representatives on the 9th of July to talk about the preparation for the autumn flu season in the US, whilst the UK has focused their response on the H1N1 virus to cope with widespread infection.

B

In the meantime, the southern hemisphere is going into the middle of the winter flu season, and the swine H1N1 virus seems to be replacing the seasonal flu viruses that have been circulating until now. This is related to the seasonal flu vaccine which several companies are still producing. It could cause some problems when the northern hemisphere flu season comes at the end of this year.

C

The flu pandemics of 1918, 1957 and 1968 showed a high level of seasonal change and also released mild form of the H1N1 virus which circulates through the existing flu virus, H3N2. So, nobody knows how the H1N1 virus is going to behave. If it is not exchanged with the seasonal virus – the milder H1N1 and H3N2 – the world is facing the prospect of catching all three viruses at once. It would be a complicated scenario, as both seasonal and pandemic vaccines would be wanted and patients from different age groups would be affected. Although

based on what is happening in the southern hemisphere, it does not seem that this will be the case.

D

In the northern hemisphere, swine flu has spread to the extent that over 98% of flu cases genotyped in the US towards the end of June were caused by the pandemic virus. This is to be expected. Whilst the seasonal flu viruses generally die out during the summer season, the pandemic virus can be more powerful as fewer people have built up immunity to it.

E

The state of Victoria in Australia reported this week that the H1N1 virus is now considered for 99% of all flu cases. There are reports of a similar situation in South America. In Chile, the H1N1 virus is also much stronger than other seasonal viruses. “98% of the flu cases we now take are caused by H1N1,” Jeanette Vega, Chile’s undersecretary of public health, said last week about a pandemic peak in Cancun, Mexico. “The seasonal vaccine is not used.”

F

In the Argentine capital Buenos Aires, Juan Manzur, the health minister, reported last week about the emergency situation in that 90% of the flu is a result of the H1N1 virus.

G

During this winter in the northern hemisphere, it is an important matter. “If the pandemic virus greatly attacks the seasonal viruses in a regular flu season, the seasonal viruses are likely to be exchanged by the new virus, like in the 1968 pandemic,” says Ab Osterhaus in the University of Rotterdam in the Netherlands.

H

In previous pandemics, the virus has changed, producing negative side effects. So far for H1N1, there have only been a few ominous signs.

I

The mutation of the virus's polymerase enzyme has been replicated efficiently from a sample taken in Shanghai. Ron Fouchier at the University of Rotterdam says that this could spread if it makes the virus more contagious, but the virus may also improve pathogenicity.

J

Also last week, two cases of the H1N1 virus with resistance to the main antiviral drug, Tamiflu, were found in people using the drug. Another was found in a girl who had never taken the drug, suggesting Tamiflu – resistant to the H1N1 virus might already be in circulation.

Questions 1-9

Complete the summary below.
Choose **NO MORE THAN THREE WORDS** from the passage for each answer.
*Write your answers in boxes **1-9** on your answer sheet.*

There is currently a severe problem of **1**…… in the world, especially both the US and the UK are making strenuous efforts to solve the problem.

In the meantime, during the middle of winter flu season, **2**……. is likely to substitute the seasonal flu viruses in the southern hemisphere. Also, over 98 per cent out of flu cases genotyped in the US were generated by **3**…….. Whilst seasonal flu viruses usually fade away in **4**……..., the pandemic virus has the advantage that few people have immunity to it.

There are reports that the H1N1 virus accounts for more than 90 per cent of all flu cases in countries, such as **5**……..., **6**…… and **7**……
According to Ab Osterhaus, **8**…… in a regular flu season can be replaced by the pandemic virus. A new virus was found to be resistant to the antiviral drug, **9**…….

Questions 10-13

Do the following statements reflect the claims of the writer in Reading Passage 1?
In boxes **10-13** on your answer sheet, write

YES if the statement reflects the opinion of the writer
NO if the statement contradicts the opinion of the writer
NOT GIVEN if it is impossible to say what the writer thinks about this

10 The UK and the US had discussed and worked together on the swine flu pandemic in the past.
11 Over 98 per cent of flu cases in the US was motivated by the pandemic virus.
12 In Argentina, 60 per cent of the flu virus in circulation is the H1N1 virus.
13 Tamiflu is the crucial antiviral medicine which is resistant to the H1N1 virus.

2. READING PASSAGE 2

Mission to Collect Materials on the Moon

A

Whilst the world watched in excitement as Neil Armstrong and Buzz Aldrin landed on the moon, planetary scientists were focused on something else. For them, the value of the mission was is the cargo they brought back to earth. By the time Armstrong and Aldrin climbed into the lunar module for the last time, they had gathered 22 kilograms of moon rocks, completely filling a small suitcase. Over five Apollo crews brought back a total collection of 382 kilograms of material containing 2,200 samples.

B

The rocks were known at the time as a scientific treasure and they did not disappoint. Paul Spudis, a geologist of the Lunar and Planetary Institute in Houston, Texas, said, “Our ideas about planetary formation and evolution must be rewritten after the discoveries made by the Apollo crews.” Harold Urey, a Nobel prizewinner, and one of the advocates of lunar exploration had predicted that the moon was composed of primitive meteoritic material. But his conclusion was wrong. Some of the rocks looked just like the rocks on earth.

C

Many clues that the lunar rocks contained have taken a couple of years to effectively analyse. Also, some of the conclusions are still debated. A big surprise was the evidence that the early moon was covered by a lot of molten rock. The moon’s mountainous regions are made of anorthosite, a rare rock on earth that forms when light, aluminum-rich minerals float to the top of lave.

D

Nowadays, the smart money is on the idea that the moon was created as a result of something that occurred around 50 million years after the solar system was created when the Earth was in its infancy. From his hypothesis, the earliest Earth ran into a planet that was a similar size to Mars and debris from the collision went into orbit around the Earth which rapidly came together to form the moon.

E

The “giant impact” scenario led to a radical re-evaluation of the history of the early solar system. Before Apollo, planetary scientists watched the collection of objects orbiting the sun like a clockwork mechanism in which collisions were rare and trivial. Now, it is accepted as being a far more active environment, shuffling, colliding or ejecting. This history of all the inner planets has been shaped by collisions and nowhere is that history more visible than the moon.

F

Another surprise was the rocks from the moon’s largest impact craters indicate that all craters are roughly the same age, between 3.8 and 4 billion years old. It never coincided. The moon and, by extension, the Earth must have been caused by a devastating barrage half a billion years after the solar system formed. To cause this process, something big must have been going back to the outer solar system, but what? Surprisingly, this episode in the history of the solar system has come to be known as the last heavy bombardment and ended at roughly the same time as the first signs of life on earth.

G

These key discoveries about our planet’s history may never have been made without the samples taken from the moon for chemical analysis and isotopic dating. So, do the Apollo rocks hide any more secrets? All 2,200 samples have been researched, and Randy Korotev, a lunar geochemist at Washington University in St Louis, Missouri, says that it is unlikely that there will be anything groundbreaking left to find from them.

However, they may yet keep some more delicate secrets. Korotev says, “We are steadily developing better tools and asking better questions.” Especially, the instruments for dating mineral samples have been more delicate, enabling researchers to study the age of ever smaller samples, like tiny mineral grains within a rock.

H

These techniques have stimulated a rethink of some key dates in lunar history in the past two years. A team at the Swiss Federal Institute of Technology dated the formation of the moon’s magma oceans. Also, by inference, the creation of the moon itself is estimated to have happened between 20 and 30 million years later than we originally thought, at approximately 4.5 billion years ago. Alexander Nemchin with five colleagues in the Cutin University of Technology in Perth, Western Australia also estimated that a lunar zircon was around 4.417 billion years old when the last of the magma oceans solidified.

I

The Apollo rock samples are not finished answering some of the bigger picture questions. What will we discover on the opposite side of the moon’s surface that we are unable to see from the Earth? Can we put together a detailed history of the lava flows that formed the basalts of the lunar seas? Can we discover any samples from deep inside the moon? These are all seen as very good reasons for coming back to the moon. The big picture needs more samples, more data and more contexts. According to Gary Lofgren, a curator of NASA’s lunar rock collection at Johnson Space Centre in Houston, “There’s no lack of target and scientific questions. It’s not just about the moon but about the solar system’s history. This is the lesson that we have learned from Apollo.”

Questions 14-20

Reading Passage 2 has nine paragraphs, **A-I**.
Choose the correct heading for paragraphs **B-I** from the list of headings below.
*Write the correct number, **i-ix**, in boxes **14-20** on your answer sheet.*

List of Headings

i The scientific value of the rocks
ii The craters of the moon
iii The mission to collect material on the moon
iv The impact of the rocks discovered
v The surprising evidence about the moon
vi The history of the early solar system
vii The unknown questions left for future
viii NASA's lunar rock collection
ix Study of lunar history

	Example	*Answer*
	Paragraph **A**	*iii*
14	Paragraph **B**	
15	Paragraph **C**	
16	Paragraph **E**	
17	Paragraph **F**	
18	Paragraph **G**	
19	Paragraph **H**	
20	Paragraph **I**	

Questions 21-23

Choose the correct letter, **A**, **B**, **C** or **D**.
Write the correct letter in boxes **21-23** on your answer sheet.

21 The scenario "giant impact" is mainly concerned with

A ways of finding the history of the early solar system.
B the history of the early solar craters.
C the origin of the earth.
D ways of learning about orbiting the sun.

22 The samples were taken from the moon help

A planetary scientists to make tools for dating mineral.
B geochemists to study some craters.
C planetary scientists to make key discoveries about the earth's history.
D geologists to predict the moon's primitive material.

23 Gary Lofgren's quote says that when we try to remember things,

A the remaining big-picture questions will never come true.
B the history of the lava flows will be returned.
C plenty of targets and scientific questions will be collected.
D the earth's development will be the milestone in the solar system's history

Questions 24-28

Do the following statements reflect the claims of the writer in Reading Passage 2?
In boxes **24-28** on your answer sheet, 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

24 The rocks which Neil Armstrong and Buzz Aldrin collected were more valuable than those of Russian astronauts.
25 The lunar rocks taken are critical to beginning to understand history.
26 All craters on the moon are of a similar age, up to 5 billion years old.
27 The main clues for discovering the earthquake are given by the samples taken from the moon.
28 The half of the moon's surface that we can never see is related to the solar system's history.

3. READING PASSAGE 3

Organism's Appearance

A

As Darwin discovered his evolution theory, the earliest known fossils were left in rocks which he called the Silurian age. Older rocks seemed to contain no fossils. The apparently sudden appearance of subtle animals like trilobites was not inconsistent with Darwin's thoughts of gradual evolution. "If my theory will be true, it is unquestionable that before the lowest Silurian stratum was deposited … the world swarmed with living creatures. To the question of why we do not find records of these vast primordial periods, I can give no satisfactory answer," Darwin wrote in the first edition of *On the Origin of Species.* His puzzle is known as Darwin's dilemma.

B

Of course, we have discovered a lot of fossils from the earliest periods. Rocks of 3.8 billion years old have signs of life, and the first recognizable bacteria come out in rocks of 3.5 billion years old. During the Ediacaran, approximately one billion years ago, multi-cellular plants with red and green algae appeared and approximately 575 million years ago was found in the first multi-cellular animals.

C

Even so, there are many perplexing questions. Why did animals evolve so late in the day? And why did the ancestors of modern animals apparently evolve in a geological blink of an eye during the early Cambrian period between 542 and 520 million years ago? Recently, a series of discoveries could help to explain these long-lasting mysteries. These discoveries suggest that the earliest animals evolved much earlier

than we thought, perhaps over 850 million years ago. However, the really extraordinary part is that these early animals may have completely changed the planet, paving the way for the larger and more complex animals to follow them.

D

Several aspects of the biggest discoveries have come from an ancient seabed in China, called the Doushantuo Formation, where unusual conditions conserved some extraordinary fossils. During the last part of the Ediacaran period, layers between 550 and 580 million years old include tiny spheres made of from one to dozens of different cells – just like animals' first embryos. A couple of things have suggested that they are the property of giant bacteria, but a series of studies over the past decade have left little doubt that they are really animal embryos.

E

Leiming Yin, a researcher at the Nanjing Institute of Geology and Paleontology in China, reported discovering embryos encased inside hard, spiky shells unlike anything produced by bacteria in 2007. Furthermore, evidence of shells that apart from the deficiency of conserved embryos on the inside are identical can be seen in rocks as old as 632 million years – the appearance of the Ediacaran period – suggesting that the animal embryos themselves go back this far.

F

Other more tentative discoveries push the appearance of animals back even further. Roger Summons, a researcher in the Massachusetts Institute of Technology, and his colleague Gordon Love studies brownish, oily sandstone cores drilled from 4 kilometres below the desert of Oman. The oily remains of dead organisms drifted down to the depths of ancient oceans, where they decomposed slowly because of the lack of oxygen. No visible fossils are present but within that oil are molecular fossils – chemicals taken from the ancient organisms. In layers that are 635 to 713 million years old, Summons and Love discovered 24-isopropylcholestane (24-IPC), a stable form of a kind of cholesterol that these days are only discovered in the cell membranes of certain

sponges. “The sponge biomass must have been so substantial,” says Love, now at the University of California, Riverside. “They were ecologically outstanding.”

G

Fuel of Life

With the oceans changed, the stage was finally set for the evolution of more complicated body forms. The idea that increasing oxygen levels played a major role in the explosion of life during the Cambrian period is far from new, but most of the researchers attribute the increase in oceanic oxygen to the increase in the atmosphere. If Butterfield is right, it was basically because of animals taking over from bacteria. “These geochemical signatures [of oxygenation] are not causing the evolution of animals,” he insists. “They’re consequences of the dawn of animals.”

“He is right,” says Brasier. In fact, he thinks the link between complex life and the transformation of the planet runs even deeper. In *Darwin’s Lost World,* a book published earlier this year, Brasier suggests that the improved burial of carbon resulting from the rising of large cells and groups of cells – perhaps with plants like seaweed – sucked carbon dioxide out of the atmosphere, setting off the series of ice ages that aided the first animals to wrestle for control of the oceans with bacteria. “Rather than being the cause of animal evolution, the ice ages may well have been the response to it,” he says.

Questions 29-33

Look at the following statements and the list of researchers below.
Match each statement with the correct researcher(s), **A-E**.
*Write the correct letter, **A-E**, in boxes **29-33** on your answer sheet.*
NB *You may use any letter more than once.*
29 studied brownish, oily sandstone cores.
30 announced embryos on the inside surrounded by hard, spiky shells.
31 claimed that the expended burial of carbon resulted in the series of ice ages.
32 wrote in the first edition of *On the Origin of Species.*
33 discovered 24-isopropylcholestane.

List of Researchers

A Darwin
B Leiming Yin
C Summons and Love
D Elizabeth Turner
E Brasier

Questions 34-36

Answer the questions below.
Choose **NO MORE THAN THREE WORDS** from the passage for each answer.
*Write your answers in boxes **34-36** on your answer sheet.*

34 What is an ancient seabed in China, conserving some weird fossils?
35 What made organisms decompose in the depths of ancient oceans?
36 What was written by Brasier to swell burial of carbon resulting from the rise of large cells and groups of cells?

Questions 37-40

Complete the summary below.
Choose **NO MORE THAN FOUR WORDS** from the passage for each answer.
*Write your answers in boxes **37-40** on your answer sheet.*

Fuel of Life

From the oceans fluctuated, **37**…….. of increasing levels played a vital part in the increase of oceanic oxygen in the atmosphere. Actually, Brasier considers the connection of **38**…… and **39**…… goes deeper. According to *Darwin's Lost World*, he claims that carbon burial was getting more inhaled **40**…….. outside of the atmosphere, caused the series of ice ages that was supported with the first organism generated from bacteria.

III. ĐỀ 3

1. READING PASSAGE 1

Parasitic Worms' Efficacy

A

Parasitic worms, like hookworms, whipworms, pinworms and flukes that plague humans are enough to make most of us shudder, except John Turton. In the middle of 1970s, whilst working at the UK's Medical Research Council Laboratories in Surrey, he intentionally infected himself with hookworms in an attempt to alleviate his chronic hay fever. It worked. During two summer seasons whilst he held the parasites, his allergy diminished.

B

In regions where parasitic worm infections are rife, when the remedy emerged, Turton's vital experiment came. In 1913 W. Herrick, a doctor from Columbia University in New York found a very different link between parasitic worms, or helminths, and allergies. Lab workers analysed the gut-dwelling roundworm Ascaris that often caused tenderness and swelling around the fingers and more severe asthma after longer exposure.

C

Researchers have been trying to make sense of these contradicting findings since the 1970s in the hope of being able to use the power of parasites to help free people of their allergies, without making things worse. They know they are playing with fire. After all, helminths are responsible for some truly horrible diseases and cause great suffering around the world. However, as the effects of helminths on the human

body become clearer, it looks like their healing powers may have potential benefits.

D

Not surprisingly, no researchers have been willing to take the risk of deliberately infecting themselves as Turton had done. Instead, most studies are dependent on populations in countries where people are already infected. This research tends to emphasize three commonly diagnosed allergic conditions: asthma, eczema and hay fever. The results have been confusing, but now researchers are beginning to have a better understanding.

E

For instance, a study conducted in Taiwan showed that people infected with Enterobius vermicularis, a pinworm that is one of the most common gut parasites in the world, were less likely to have hay fever than the rest of the general population. But the results from Ecuador show a different story. Hay fever was not more common in children living in urban areas than it was in children living in rural areas. The parasite was equally common in both groups, so the researchers concluded that something else must be responsible for the prevalence of hay fever.

F

Knowing about eczema has proved as difficult to interpret. For instance, a study in Uganda discovered that eczema was less common among babies whose mothers had been infected with helminths whilst being pregnant. But, another study this time in Ethiopia discovered that children with Trichuris worms, and whipworms that infest the large intestine, were more likely to have eczema than uninfected children.

G

Regarding asthma, Herrick's discovery that it can be started by contact with the Ascaris was confirmed in the 1970s. But, hookworms decreased the extremity of asthma in a group of Ethiopians and similar benefits have been seen in Brazilian asthma sufferers infected with the Schistosoma Mansoni, the flatworm responsible for schistosomiasis, which damages internal organs. What are we to make of all this? The outstanding link between allergies and parasites is the human immune system. Allergies are caused by an overactive immune response, and helminths have strategies to dampen down our immune response to stimulate their survival. After all, they have evolved alongside humans for several thousands of years.

H

In people with no allergies, foreign material entering the body stimulates the release of cytokines, molecules that sound the alarm to get the attention of other immune cells. As immune cells set to attack the intruder, another set of molecules is released to prohibit the immune response from overreacting. One of the main molecules responsible for keeping reactions in check is interleukin-10, which inhibits the release of certain cytokines. People with allergies tend to have lower than normal levels of interleukin-10, so their immune responses frequently get out of hand. In contrast, people infected with helminths have above-average levels of the molecule, and research on schistosomiasis patients indicates that this is at least partially because of the worms that set free chemicals that trigger the production of interleukin-10 in their host.

Questions 1-8

Reading Passage 1 has eight paragraphs, **A-H**.
Which paragraph contains the following information?
*Write the correct letter, **A-H**, in boxes **1-8** on your answer sheet.*
NB *You may use any letter more than once.*

1 Lab workers' duties
2 Contrary results between surveys
3 A voluntary attempt against allergy
4 The same results between surveys
5 A powerful remedy for allergies
6 Understanding of immune responses
7 Critical connection between allergies and parasites
8 Three most common allergies

Questions 9-13

Do the following statements reflect the claims of the writer in Reading Passage 1?
In boxes **9-13** on your answer sheet, 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

9 John Turton infected himself with hookworms by mistake.
10 Dr Herrick has found a different feature between worms and allergies.
11 Researchers have not known the healing potential of parasites since the 1970s.
12 Allergies have the same appearance as parasites.
13 People with allergies may have higher than ordinary levels of interleukin-10.

2. READING PASSAGE 2

The Nagymaros Dam

A

When Janos Vargha, a biologist from the Hungarian Academy of Sciences, began a new career as a writer with a small monthly nature magazine called Buvar, it was 9 years after the story behind the fall of the Berlin Wall had started to unfold. During his early research, he went to a beauty spot on the river Danube outside Budapest known as the Danube Bend to interview local officials about plans to build a small park on the site of an ancient Hungarian capital.

B

One official mentioned that passing this tree-lined curve in the river, a popular tourism spot for Hungarians was monotonous. Also, it was to be submerged by a giant hydroelectric dam in secret by a much-feared state agency known simply as the Water Management.

C

Vargha investigated and learned that the Nagymaros dam (pronounced “nosh-marosh”) would cause pollution, destroy underground water reserves, dry out wetlands and wreck the unique ecosystem of central Europe’s longest river. Unfortunately, nobody objected. “Of course, I wrote an article. But there was a director of the Water Management on the magazine’s editorial board. The last time, he went to the printers and stopped the presses, the article was never published. I was frustrated and angry, but I was ultimately interested in why they cared to ban my article,” he remembers today.

D

He found that the Nagymaros dam was part of a joint project with neighbouring Czechoslovakia to produce hydroelectricity, irrigate farms and enhance navigation. They would build two dams and re-engineer the Danube for 200 kilometres where it created the border between them. “The Russians were working together, too. They wanted to take their big ships from the Black Sea right up the Danube to the border with Austria.”

E

Vargha was soon under vigorous investigation, and some of his articles got past the censors. He gathered supporters for some years, but he was one of only a few people who believed the dam should be stopped. He was hardly surprised when the Water Management refused to debate the project in public. After a public meeting, the bureaucrats had pulled out at the last minute. Vargha knew he had to take the next step. “We decided it wasn’t enough to talk and write, so we set up an organization, the Danube Circle. We announced that we didn’t agree with censorship. We would act as if we were living in a democracy.” he says.

F

The Danube Circle was illegal and the secret publications it produced turned out to be samizdat leaflets. In an extraordinary act of defiance, it gathered 10,000 signatures for a petition objecting to the dam and made links with environmentalists in the west, inviting them to Budapest for a press conference.

G

The Hungarian government enforced a news blackout on the dam, but articles about the Danube Circle began to be published and appear in the western media. In 1985, the Circle and Vargha, a public spokesman, won the Right Livelihood award known as the alternative Nobel prize. Officials told Vargha he should not take the prize but he ignored them. The following year when Austrian environmentalists joined a protest in Budapest, they were met with tear gas and batons. Then the Politburo

had Vargha taken from his new job as editor of the Hungarian version of *Scientific American.*

H

The dam became a focus for opposition to the hated regime. Communists tried to hold back the waters in the Danube and resist the will of the people. Vargha says, “Opposing the state directly was still hard.” “Objecting to the dam was less of a hazard, but it was still considered a resistance to the state.”

I

Under increasing pressure from the anti-dam movement, the Hungarian Communist Party was divided. Vargha says, “Reformists found that the dam was not very popular and economical. It would be cheaper to generate electricity by burning coal or nuclear power.” “But hardliners were standing for Stalinist ideas of large dams which mean symbols of progress.” Environmental issues seemed to be a weak point of east European communism in its final years. During the 1970s under the support of the Young Communist Leagues, a host of environmental groups had been founded. Party officials saw them as a harmless product of youthful idealism created by Boy Scouts and natural history societies.

J

Green idealism steadily became a focal point for political opposition. In Czechoslovakia, the human rights of Charter 77 took up environmentalism. The green-minded people of both Poland and Estonia participated in the Friends of the Earth International to protest against air pollution. Bulgarian environmentalists built a resistance group, called Ecoglasnost, which held huge rallies in 1989. Big water engineering projects were potent symbols of the old Stalinism.

Questions 14-21

Complete the summary, using the list of words and phrases, **A-L**, below.
*Write the correct letter, **A-L**, in boxes **14-21** on your answer sheet.*

The story of the fall of the Berlin Wall had started to unfold 9 years earlier, Janos Vargha visited the river Danube out of Budapest to discuss a matter of **14**…… with executives. However, unfortunately, the tree-lined curve in the river was **15**…….. by a colossal dam which caused a lot of fear. He noticed the negative impact of the Nagymaros dam would be **16**…… on the ecosystem around the main river. Besides, the dam was engineering public works, generating hydroelectricity, irrigating farmlands and developing sailing trade which was **17**…… with a border of Czechoslovakia.

After one public meeting, Vargha **18**…….. the Danube Circle for showing the autonomy of the people in a democracy. Despite every effort, he who would eventually become the editor of the Hungarian edition was **19**…….. by the Politburo. Fortunately, with plenty of pressure from the anti-dam movement, east European communism's final symbol was opposed by the **20**…….. Overall, between political processing and environmentalists have been on a **21**…… of views.

A severe **B** discharged **C** constructing a park of small-scale
D passed **E** reformist **F** swallowed up
G separated **H** favourable **I** established
J collision **K** combined **L** environmentalists

Questions 22-26

Do the following statements reflect the claims of the writer in Reading Passage 2?
In boxes **22-26** on your answer sheet, 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

22 Janos Vargha predicted that the Nagymaros dam would wreck the natural atmosphere before it was built.
23 The Nagymaros dam's project was managed by the Russians only.
24 The Danube Circle was an unauthorised group for opposing the dam.
25 The Politburo accepted Vargha as editor of the Hungarian edition.
26 The human rights Charter 77 in Czechoslovakia accepted green thoughts.

Questions 27-28

Choose the correct letter, **A**, **B**, **C** or **D**.
Write the correct letter in boxes **27-28** on your answer sheet.

27 In this passage, the Nagymaros dam's main purpose was

A related to Russian Water Management.
B to develop a source of electronic power, farming and sail.
C to connect the Black Sea and the Danube.
D to develop a beauty spot on the river Danube.

28 Vargha claims that opposing the dam was

A to preserve the previous ecosystem around the river Danube.
B to protest against air pollution.
C to supply plenty of water for fishing and aquaculture in the river Danube.
D to preserve the site of an ancient Hungarian capital.

3. READING PASSAGE 3

Human Guinea Pig

A

There are 50 million people in the world being used as guinea pigs in clinical trials testing experimental drugs. Apart from potentially risking part of their lives, applicants must pass a severe series of tests just to be able to participate in some trials. However, acceptance means more tests, negative side effects and a considerable disturbance to their daily lives. So what's in it for them? As journalist Alex O'Meara explains in *Chasing Medical Miracles*, some participate out of genuine altruism, whilst some are looking for cures for their own disorders. O'Meara having diabetes himself volunteered for a risky transplant of insulin-producing cells from the liver, and his story spread through the book.

B

O'Meara knows people choose to participate for life's great motivator: money. Clinical trials are a huge business, making up to $24 billion annually, and the cash they offer as compensation has become a sought-after way to make extra money. This exchange of money often involves people who are sick and vulnerable and emphasises the dark ethical waters in which current clinical trials are mired.

At intervals, the ill feel compelled to join a trial to get medical care. Some unethical researchers, desperate to recruit the large numbers needed to make their researchers statistically valid, take advantage of this. It can be difficult for ill people to take that, at best, they are taking experimental medicine and at worst they are taking nothing at all.

C

Desperation for money or medicine is never a basis for unbiased decision-making. How can a researcher be sure a person is giving their true consent? And if a person gets better as a result of taking an experimental drug, what happens when their drug supply finishes after the trial?

D

These ethical quandaries have influenced healthcare in develop countries where clinical trials are a prospering industry. According to Adriana Petryna in *When Experiments Travel*, in spite of the fact that drug companies are moving their trials to developing countries, only 10% of drug research addresses disorders that influence the world's poor. Such diseases make up to 90% of the global disease burden. Establishing ethical and legal responsibilities is also becoming harder, she reports. With an increased number of subcontractors included in trials, it is clear that no one is overly concerned about patient welfare.

E

From this theory, international human rights frameworks such as the Nuremberg Code should ensure that participants are not taking any positive effect. In reality, largely poor and illiterate populations are being exploited. Besides, ethical regulations in poor countries are rarely strict, therefore researchers can get away with recruiting people into HIV trials knowing that they will die without the experimental drug.

F

O' Meara also reports about drug company's greed and the inability of regulators to control the rapidly increasing number of trials. The US Food and Drug Administration inspects less than 1% of the 350,000 registered trial sites. Drug firms are managing non-profit organizations that are undertaking just 30% of trials. However, in spite of their faults, clinical trials are still an essential tool of modern medicine.

Questions 29-36

Complete the summary below.
Choose **NO MORE THAN THREE WORDS** from the passage for each answer.
*Write your answers in boxes **29-36** on your answer sheet.*

For testing experimental **29**……., there are 50 million people being used as guinea pigs looking for remedies to **30**…… in clinical trials in spite of the risks throughout the world. Actually, that means people are both eager for life's considerable milestone of **31**…… to make up insufficient labour pay in their lives and **32**…….. to participate in a trial. These ethical dilemmas have influenced health problems in **33**……. where drug companies encouraged their trials.
From these situations between **34**…… and ……., international human rights frameworks like **35**……. should inform people of poverty of the poor countries which have a lack of **36**…….. ethical regulations.

Questions 37-39

Complete the sentences below.
Choose **NO MORE THAN TWO WORDS** from the passage for each answer.
*Write your answers in boxes **37-39** on your answer sheet.*

37 Whilst some choose to cure themselves, some participated due to……..

38 Hopelessness for either …… or …… does not work for fair decision-making.

39 Drug companies invest a lot of money in developing countries, causing……..

Question 40

Choose the correct letter, **A, B**, **C** or **D**.
*Write the correct letter in box **40** on your answer sheet.*
Which of the following phrases best describes the main aim of Reading Passage 3?

A to warn the guinea pigs are likely to have financial problems
B to describe how clinical trials were rapidly increasing and how serious they were
C to suggest that the Nuremberg Code is needed in other countries
D to examine how drug companies promoted the use of guinea pigs

IV. ĐỀ 4

1. READING PASSAGE 1

Extraterrestrial National Park

A

The message to visitors at many beauty spots is “TAKE only pictures, leave only footprints.” Although you won’t see the actual place, Apollo 11 astronauts Neil Armstrong and Buzz Aldrin took their giant leap for mankind on the moon. It will be the first extraterrestrial national park.

B

It may still be some years off, but the imminent reality of space tourism is already stimulating some archaeologists to begin to plan how to protect historic sites in space. With further moon missions planned, the fear is that the principal sites like Apollo 11’s landing place may be in danger. According to Beth O’Leary, a researcher in New Mexico State University in Las Cruces, “Technologically, probably the most important event in human history was to land to another celestial body,” “It’s like the discovery of fire or the first stone tools. They should be protected and conserved.”

C

In September 1959 since the Soviet Union’s Luna 2 crashed into the moon, a total of 40 expeditions have touched down on the moon’s surface. 22 of them were launched by the US with the six crewed Apollo missions launching between 1969 and 1972. The Apollo missions alone left behind 23 large artefacts including the descent and ascent stages of the lunar module landing equipment, the stage there Saturn rockets

used to fly them there, and the lunar rovers or “moon buggies” the astronauts used to explore when they arrived.

D

As well as these, there are also smaller artefacts and personal items scattered around, such as Neil Armstrong’s boots and portable life-support system, scientific instruments and their power generators. Of course, the iconic US flag planted in the moon’s surface is there too. There are also the footprints and rover tread paths. In spite of the passing of the years, these remains are carved into the dust, since the moon has no wind or rain to wash them away.

E

P.J. Capelotti, an anthropologist at Penn State University in Abington, has mapped out five “lunar parks.” These are the areas where the majority of the artefacts are concentrated and will be used as a basis for future preservation efforts. “Although nobody’s saying that the whole moon has to be off-limits, people are starting to make plans for tourism and mineral extraction, or for putting a base there, needing to be aware of them and work around them.”

F

More technological developments are also on their way. NASA’s LCROSS mission plans to crash an SUV-sized rocket into one of the moon’s poles later this year with the hope of finding water there. At the same time, teams competing for the Google Lunar X Prize for the first privately funded robot to reach the moon have been offered a $5 million bonus if they take a picture of artefacts like the Apollo 11 landing equipment. Already, a question to be reported is how national governments and private companies should cooperate to ensure that artefacts are protected. There is some evidence that the US government is interested in working alongside other governments.

G

A space-flight company called TransOrbital, based in Palo Alto, California presented its plans for sending a commercial mission to the moon by the end of the 1990s. these plans include making detailed maps of the moon and landing a capsule containing personal items, like business cards and cremated ashes. The US National Oceanic and Atmospheric Administration stipulated that TransOrbital's rockets must crash well away from any historic US artefacts when its flight was over. Although ultimately TransOrbital was unable to fund the mission, it might try again in the near future.

H

According to Phil Stooke, a planetary cartographer of the University of Western Ontario in London, he agrees Luna 2 also has great significance. "It crashed, but that impact site is every bit as historic as Apollo 11." Another one is Luna 9, the first spacecraft to land sending back pictures. "They must be preserved."

I

On the remaining Apollo sites, Stooke is searching how electronics, metal and paints have degraded after years of exposure to solar radiation and extremes of temperature. Also, he suggests that another Apollo site could be turned into a biological research centre, analysing the DNA and bacteria left behind from astronauts' life-support packs.

J

Once a consensus has been reached as to which sites are worthy of conservation, and guidelines have been built up to protect them from being damaged by future missions, the next question will be how future space tourists should be allowed to interact with them. Capelotti says, "Looking at grey dust is going to hold its attraction for only so long," "People are going to make pilgrimages to these sites."

K

There is a suggestion to build domes over historic sites, or perhaps even hotels, with the artefacts displayed in the “lobby.” Another idea is to build up a raised railway track over the sites, so visitors could look at them without touching them. Capelotti says, “If Walt Disney was developing it, he would put a monorail around all five ‘lunar parks,’ so you could do the entire Apollo tour.”

Questions 1-7

Do the following statements reflect the claims of the writer in Reading Passage 1?
In boxes **1-7** on your answer sheet, 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 Archaeologists have established links between space tourism and Apollo 11.
2 Of the 40 expeditions that landed on the lunar surface, the US embarked on more than half of them.
3 Between 1969 and 1972, there were not remarkable issues in the Apollo missions.
4 Neil Armstrong made up his mind to exploit the natural resources of the moon.
5 Astronauts’ traces marked on the surface of the moon remain unchanged due to the lack of wind and rain.
6 Commercial space-flight companies planned to place both business cards and ashes on the moon.
7 In spite of financial problems, TransOrbital plan to launch their mission again in the foreseeable future.

Questions 8-13

Complete each sentence with the correct ending, **A-H**, below.
*Write the correct letter, **A-H**, in boxes **8-13** on your answer sheet.*

8 Archaeologists
9 The Apollo missions
10 Anthropologist P.J. Capelotti
11 SUV-sized rocket into the moon's people
12 TransOrbital
13 The impact site of Luna 2

A left various artefacts on the moon's surface.
B discovered water supported by NASA's LCROSS mission scheme.
C aimed to launch a project to preserve relic sites in space.
D funded a robot to reach the moon.
E promoted commercial business on the moon.
F designed the lunar parks for cultural industries and resources.
G had a similar historic impact to Apollo 11.
H made detailed maps of the moon and personal items.

2. READING PASSAGE 2

Asiatic black bear

A

Known as a moon bear, Jasper is an Asiatic black bear with a yellow crescent on his chest. The bear came to the Animals Asia Moon Bear Rescue Centre in Chengdu, China, from a bear farm in 2000.

B

When Jasper arrived, rescuers had to cut Jasper out of a tiny “crush cage.” Bear bile has been used in traditional Chinese medicine and fetches a high price. The wholesale price is approximately 4,000 yuan (approximately $580) per kilogram with each bear producing up to 5 kilograms every year in China. But it comes at a high price.

C

Jasper normally spent 15 years in a cage. Other bears spend up to 25 years without moving in cages no bigger than their bodies. Bears are milked for bile twice a day. In China, farmers use a catheter inserted into the gall bladder or permanently open wound. In Vietnam, farmers use long hypodermic needles.

D

The Animals Asia has rescued 260 bears from Chinese bear farms over the past 10 years. These bears are lucky. The official number of reared bears in China is 7,000, but the Animals Asia fears the real figure is close to 10,000.

E

In spite of the obvious cruelty, bear farming is legal in China. Whilst the Convention on International Trade in Endangered Species lists Asiatic black bears as being at the highest level of endangerment, China grants them only second-level protection, allowing them to be farmed. Although some have reported there are 15,000 bears, its figure is not a true estimate of the remaining wild population in China.

F

Bear farming is also practiced in Vietnam where it is illegal but remains common due to a lack of enforcement. There are approximately 4,000 bears on Vietnamese farms but even more in Laos, Cambodia and Korea.

Bear farming is justified on the grounds that it satisfies the local demand for bile in China, therefore decreasing the number of bears taken from the wild. Since 1989 farmers have been allowed to breed bears in captivity and hunting wild bears has been illegal. In spite of this, a lot of wild bears are still poached for their gall bladders or to restock the farms. Sometimes bears arrive at the rescue centre with missing ribs after being caught in the wild.

G

Those bears that arrived at the centre have suffered from severe physical and psychological trauma. Rescued bears can't be set free into the wild due to the long-term damage caused by their incarceration. They all need surgery to get rid of damaged gall bladders and many need additional surgery and long-term medical care because of missing claws or paws, infected necrotic wounds along with broken and missing teeth caused by biting at bars or because farmers break them to make the bears less of a hazard. Also, many have liver cancer as a result of being continually milked for bile and suffer from a litany of other ailments including blindness, arthritis, peritonitis, weeping ulcers and ingrown claws.

H

On the other hand, with the horrors of bear farming, the rehabilitation process is amazing and inspiring to witness. It takes around a year to rehabilitate a bear. Although some have to be kept alone for the rest of their lives, most can eventually be housed with other bears. The transition in personality from animals which are violent and fearful to ones which are trusting, inquisitive and completely at ease with people is truly remarkable. Robinson says, “I have visited the rescue centre and it changed my life.” That is how powerful the bears’ stories are.

I

In spite of the rescue programme, bear bile extraction remains a cause of wanton and remorseless abuse. It is difficult to change attitudes when bear bile has been used in Chinese medicine for over 3,000 years to cope with “heat-related” ailments, such as eye conditions and liver disease. These days, it is used to treat conditions from hangovers to haemorrhoids. There is some evidence from western medicine that a synthetic version of the active ingredient in bear bile, ursodeoxycholic acid, is able to treat a range of disorders including hepatitis C. But traditional Chinese medicine still insists on using natural bear bile which is often contaminated with pus, blood, urine and faeces. Although healthy bear bile is free-flowing and orangey-green, veterinarians describe bile leaking from the diseased gall bladders of rescued bears as “black sludge.”

J

The half-moon bear rescue project raises a number of critical questions. For instance, why do bears show large individual differences in response to persecution and variations in recovery? Rescued bears are powerful ambassadors, but should so much time and money be invested in saving the lives of individuals who will not make any direct contributions to saving their species? How can people from outside China work to free bears whilst respecting their Chinese colleagues and remaining sensitive to cultural tradition?

K

Efforts to quit bear farming will continue. Soon after Robinson established the Animals Asia in 1998, she negotiated an agreement with the Chinese government to work towards the eradication of bear farming. All farmers are cruel, but the very worst are identified for closure by the government and the farmers have their licences revoked. It is bears from these farms that come to the rescue centre. The Animals Asia compensates the farmers so that they can begin another business or retire. More than 40 farms have so far been closed, and China has not issued any new licences since 1994.

Questions 14-20

Complete the summary below.
Choose **NO MORE THAN THREE WORDS** from the passage for each answer.
*Write your answer in boxes **14-20** on your answer sheet.*

In 2000 Jasper, an Asiatic black bear in China was called a moon bear due to embedding **14**…….. on the chest. Whilst bear farming is illegal, it is prevalent because of weak **15**…….. in Vietnam. Since 1989 hunting wild bears has been illegal in China, but breeding bears in the farmland is not prohibited. At intervals, bears are delivered to the rescue centre without **16**……. by poachers.

Most bears that arrived at the centre have experienced **17**……. of both physical and psychological problems to be continued. Besides, **18**…… is caused by extracting the bile from the bear's gall. Over 3,000 years the Chinese have made use of the bile for healing illness related to both **19**…….. and ……. In 1998 the Animals Asia was established by Robinson. She made an agreement

against bear farming. Actually, she negotiated with the Chinese government to eliminate **20**……..

Questions 21-25

Do the following statements reflect the claims of the writer in Reading Passage 2?
In boxes **21-25** on your answer sheet, write

YES if the statement agrees with the opinion of the writer
NO if the statement contradicts the opinion of the writer
NOT GIVEN if it is impossible to say what the writer thinks about this

21 Jasper is an Asiatic black bear and it had grown in the wild.
22 China is accustomed to using the bear bile as a traditional medicine from the old times.
23 The bile from the bear's gall is extracted every day.
24 Even though bear bile use has spread among the Chinese, it had no effect on them.
25 In 1998 Robinson has reported the Animals Asia to the United Nations.

Questions 26-27

Choose the correct letter, **A**, **B**, **C** or **D**.
*Write the correct letter in boxes **26-27** on your answer sheet.*

26 The writer reports that bear bile has been prevalent in China due to

A working a sense of beauty for women.
B using traditional medicine and a little expense.
C delaying the ageing and relieving mental fatigue.
D using traditional medicine and its price being skyrocketing.

27 Jill Robinson founded the Animals Asia in 1998 in order to

A protect animals in Asian zoos.
B promote the bear rescue project to the United Nations.
C protect the bear and prohibit brutal farming in Asia.
D support bear farms.

Question 28

From the list below, choose the most suitable title for Reading Passage 2.
Write the appropriate letter **A-E** in box **28** on your answer sheet.

A Cruel bear bile business
B Increasing the bear bile supply
C Traditional Chinese medicine
D Rescue project forward
E Bear farming enforcement

3. READING PASSAGE 3

Colorado Desert

A

Particularly in the summer, California's lower Colorado desert is a harsh place. It's a barren landscape of rocks and rattlesnakes that little grows in but creosote bushes and cactus. Midday temperatures can reach 43oC and searing winds and afternoon sun combine to suck moisture from the body. This is not the place for a midday march, but that is precisely what Edward Adolph had in mind when, in the summer of 1942, he took a group of soldiers and researchers there. Adolph, a physiologist at the University of Rochester in New York state, wanted to investigate how people could live and work efficiently in the desert and how to get the best out of them.

B

He wasn't the first to consider the effects of hot, dry conditions on the human body. The image of the traveler lost in the desert, crawling towards a shimmering mirage, is probably as old as desert travel itself. But earlier researchers mainly focused on survival. According to Timothy Noakes, an exercise physiologist at the University of Cape Town and master of some of the world's toughest ultra-marathons, "They never looked at performance." Adolph was the first to test the presumptions most of the people still have about what to do if forced to make any sort of effort in unbearable heat. What he discovered most were myths. For example, stripping to T-shirt and shorts is not the best way to treat dehydration. Although long sleeves and long trousers may feel hotter, they'll slow the loss of water. Nor is there any point in rationing water when supplies are low. Postponing drinking it only makes you unhappier

sooner. Adolph wrote, “It is better to drink the water and have it inside you than to carry it.”

C

The most critical of Adolph’s discoveries was the simplest: drinking during exercise enhances performance. Nowadays, we take this for granted, but generations of coaches and distance runners were taught that drinking during exercise was for wimps. Some claimed it would only make you thirstier. Others said it could even trigger a heart attack. The author of *Marathon Running* in 1909 advised, “Don’t buy into the habit of drinking and eating in a marathon race,” “Some outstanding runners do, but it is not helpful.” Adolph tested these old assumptions by splitting his soldiers into two groups. When the average afternoon high was up to 42oC, both marched through the desert for 8 hours. The soldiers in one group were allowed to drink as much water as they needed and the others weren’t allowed any water. The results were obvious, the drinkers outperformed the non-drinkers, but the men in both groups backed out once they had sweated off 7 to 10% of their body weight.

D

To Adolph, this made perfect sense. On days when the temperature is hotter than the average person’s skin temperature – approximately 33oC – the only way for the body to cool itself is by the evaporation of sweat, and he could estimate how much moisture that required. A brisk walk could easily need three-quarters of a litre or more of evaporative cooling each hour. Adolph’s research was launched by the North Africa campaign, and he finished in 1943. But he came back to the desert every summer and supplemented his experiments with tests in his heated lab. His discoveries stayed secret until 1947 when he published *Physiology of Man in the Desert*. It went almost entirely unnoticed. In the late 1960s, marathon runners were still advised not to drink water during races. Until 1977, runners in international competitions were prohibited from drinking water in the first 11 kilometres and after that were allowed water only every 5 kilometres.

E

However, there was a complete reversal of opinion. A study began to warn of the dangers of running a marathon without enough water and suddenly runners were told they must drink during the race – and if they didn't feel like it, they should force themselves or risk heatstroke. In 1978, Alberto Salazar, one of America's great distance runners, ran a 7.1-mile race in temperatures of 29oC. At mile six, he was in second place. He said later, "The last thing I remember, and I was watching Bill Rodgers pull away from me. It was dreamlike. Bill was floating away, and I wasn't able to follow the energy to go after him. In the next mile, I faded from second to tenth, but I do not have any memory of being passed by anyone."

F

Salazar almost died. At the finish, his body temperature was 42oC and he was saved only as a result of a quick-thinking member of the medical crew promptly dumping him into a tub of iced water. Everyone "found" what Salazar had done wrong: Salazar hadn't drunk enough before or during the race. He, therefore, became dehydrated and nearly killed himself. Even Salazar accepted this. "Dehydration is insidious," he would later say. At first glance, Adolph's discoveries seem to support this. His notes about his dehydrated soldiers are a litany of sorrow. "Their only desire is to stop and to rest," he wrote of one man, after 13.4 waterless kilometres in 40oC heat. "He had an unsocial attitude, began to lag and finally stopped," he wrote of another, who managed 29.8 kilometres at 34oC.

Both 1970s and 1980s runners and coaches assumed that collapsing athletes like Salazar were simply extreme cases of the same thing. Dehydration and heat collapse were virtually synonymous in many minds. "Drink early and often," athletes were told, "and not just when thirsty." However, as Noakes points out, none of Adolph's dehydrated soldiers suffered heatstroke. "They just got very angry and stopped walking." What's more, they recovered quickly when allowed to rest and

drink. “They were able to walk almost immediately after drinking water,” Adolph wrote in one case. In another: “exhaustion relieved by water.” Salazar’s brush with death wasn’t the result of drinking too little: on a very hot day he had simply tried to run a world-class race. Under these kinds of conditions, heat is the enemy, not dehydration.

G

Adolph had accepted this but thought it too clear to guarantee more than a few lines in his book. He had conducted most of his tests on marches, not because he wasn’t interested in the effects of running in the heat, but because when he made his soldiers run, even at a slow jog their body temperature soared by 2.5^{o}C in 30 minutes. “There is no doubt that men are limited in the physical work they can do in the desert,” he wrote. The advocates of drinking-early-and-often had also overlooked Adolph’s discovery that even soldiers who were able to drink what they wanted still tended to dehydrate, and only made up their deficiencies at mealtimes. Adolph disregarded this as a “peculiarity of dehydration,” but Noakes believes he had stumbled upon a quirk of human evolution.

H

Humans, Noakes observed, are “delayed drinkers.” He supposes that this is a consequence of early humans hunting and chasing game for long distances under the African sun. There are good reasons for not stopping to drink during a hunt, not least the expectation of the prey escaping. There’s also the fact that we are not built like camels and other animals that are able to drink deeply and quickly. That makes us better runners – and running hunters – but means we cannot drink as much as we can sweat, so we delay our thirst until it’s comfortable to drink, says Noakes. Adolph never used the word evolution in his book but he would have understood Noakes’s point.

Questions 29-35

Reading Passage 3 has eight sections, **A-H**.
Choose the correct heading for sections **B-H** from the list of headings below.
*Write the correct number, **i-viii**, in boxes **29-35** on your answer sheet.*

List of Headings

i The opposite of Adolph's view
ii Adolph's studies to guarantee in the book
iii The utmost limits for survival
iv Positive evidence of Adolph's research
v A barren landscape for marching
vi Noakes' stance on humans of drinking
vii A simple solution for developing performance
viii Misjudgment of Salazar's thought

	Example	*Answer*
	Section **A**	**v**
29	Section **B**	
30	Section **C**	
31	Section **D**	
32	Section **E**	
33	Section **F**	
34	Section **G**	
35	Section **H**	

Questions 36-40

Complete the sentences below.
Choose **NO MORE THAN TWO WORDS OR A NUMBER** from the passage for each answer.
*Write your answers in boxes **36-40** on your answer sheet.*

36 Adolph found out that a critical way for improving a marathon race is…….. during a performance.

37 During walking, the body needs approximately…….. of a litre of moisture per hour.

38 International competitions didn't allow water within racing…….. kilometres.

39 Salazar nearly died at the end of the race as a result of……..

40 In the final section, Noakes indicates humans are part of the concept of…….