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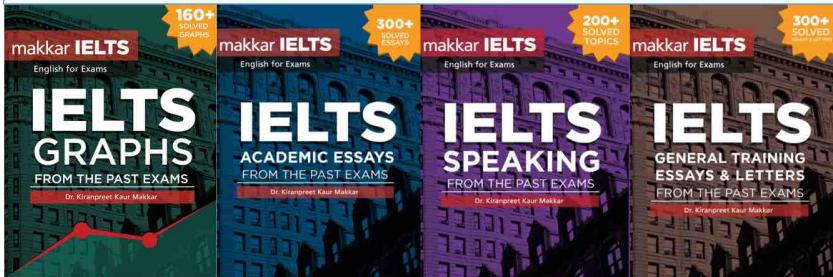
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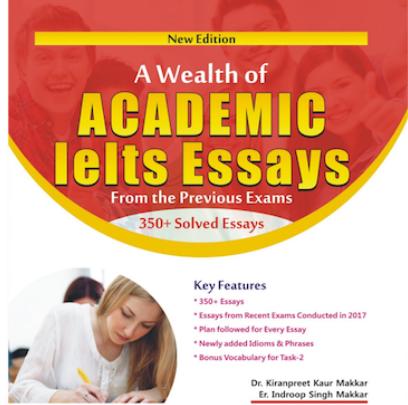
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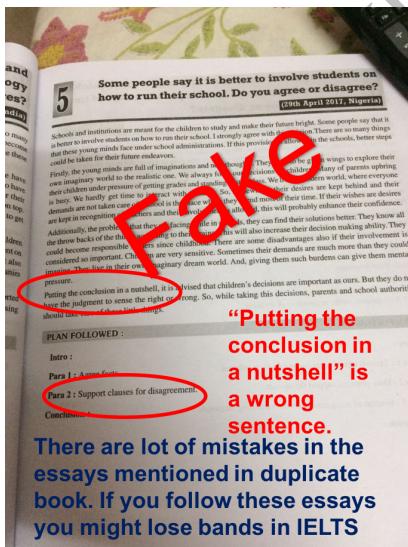
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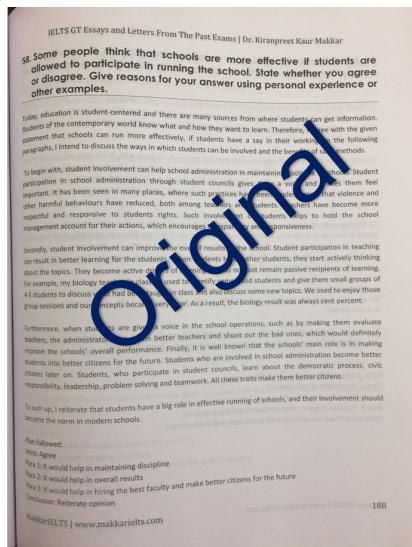
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READING TEST 1**Passage one****Going bananas**

The banana is among the world's oldest crops. Agricultural scientists believe that the first edible banana was discovered around 10,000 years ago. It has been at an evolutionary standstill ever since it was first propagated in the jungles of South-East Asia at the end of the last Ice Age. Normally the wild banana, a giant jungle herb card *Musa acuminata*, contains a mass of hard seeds that make the fruit virtually inedible. But now-and-then, hunter-gatherers must have discovered rare mutant plants that produced seamless, edible fruits. Geneticists now know that the vast majority of these soft-fruited plants resulted from genetic accidents that gave their cells three copies of each chromosome instead of the usual two. This imbalance prevents seeds and pollens from developing normally, rendering the mutant plants sterile. And that is why some scientists believe the worst – the most popular fruit could be doomed. It lacks the genetic diversity to fight off pests and diseases that are invading the banana plantations of Central America and smallholdings of Africa and Asia alike.

In some ways, the banana today resembles the potato before blight brought famine to Ireland a century and a half ago. But it holds a lesson for other crops too, says Emile Frison, top banana at the International Network for the Improvement of Banana and Plantain in Montpellier, France. The state of the banana, Frison warns, can teach a broader lesson: the increasing standardization of food crops around the world is threatening their ability to adapt and survive.

The first Stone Age plant breeders cultivated these sterile freaks by replanting cuttings from their stems. And the descendants of those original cuttings are the bananas we still eat today. Each is a virtual clone, almost devoid of genetic diversity. And that uniformity makes it ripe for disease like no other crop on Earth. Traditional varieties of sexually reproducing crops have always had a much broader genetic base, and the genes will recombine in new arrangements in each generation. This gives them much greater flexibility in the evolving response to disease – and far more genetic resources to draw on in the face of an attack. But that advantage is fading fast, as growers increasingly plant the same few high-yielding varieties. Plant breeders work feverishly to maintain resistance in these standardized crops. Should these efforts falter, yields of even the most productive crop could swiftly crash. "When some pests or disease comes along severe epidemics can occur," says Geoff Hawtin, director of the Rome-based International Plant Genetic Resources Institute.

The banana is an excellent case in point. Until the 1950s, one variety, the Gros Michel, dominated the world's commercial business. Found by French botanists in Asia in the 1820s, the Gros Michel was by all accounts a fine banana, richer and sweeter than today's standard banana, and without the latter's bitter aftertaste when green. But it was vulnerable to a soil fungus that produced a wilt known as Panama disease. "Once the fungus gets into the soil, it remains there for many years. There is nothing farmers can do. Even chemical spraying won't get rid of it," says Rodomiro Ortiz, director of the International Institute for Tropical Agriculture in Ibadan, Nigeria. So plantation owners played a running game, abandoning infested fields and moving to "clean" land – until they ran out of clean land in the 1950s and had to abandon the Gros Michel. Its successor, and still the reigning commercial king, is the Cavendish banana, a 19th century British discovery from southern China. The Cavendish is resistant to Panama disease and, as a result, it literally saved the international banana industry. During the 1960s, it replaced the Gros Michel on supermarket shelves. If you buy a banana today, it is almost certainly a Cavendish. But even so, it is a minority in the world's banana crop.

Half a billion people in Asia and Africa depend on bananas. Bananas provide the largest source of calories and are eaten daily. Its name is synonymous with food. But the day of reckoning maybe coming for the Cavendish and its indigenous kin. Another fungal disease, Black Sigatoka – which causes brown wounds on leaves and premature fruit ripening – cuts fruit yields by 50 to 70% and reduces the productive life of banana plants from 30 years to as little as two or three. Commercial growers keep Sigatoka at bay by a massive chemical assault. 40 sprayings of fungicide a year is typical. But even so, diseases such as Black Sigatoka are getting more and more difficult to control. "As soon as you bring in a new fungicide, they develop resistance," says Frison. "One thing we can be sure of is that the Sigatoka won't lose in the battle." Pool farmers, who cannot afford chemicals, have it even worse. They can do little more than watch their plants die. "Most of the banana trees in Amazonia have already been destroyed by the disease" says Luadir Gesparotto, Brazil's leading banana pathologist with the government research agency EMBRAPA. Production is likely to fall by 70% as the disease spreads, he predicts. The only option would be to find a new variety.

But how? Almost all edible varieties are susceptible to the diseases, so growers cannot simply change to a different banana. With most crops, such a threat would unleash an army of breeders, scouring the world for resistant relatives whose traits they can breed into commercial varieties. Not so with the banana. Because all edible varieties are sterile, bringing in new genetic traits to help cope with pests and diseases is nearly

impossible. Nearly, but not totally. Very rarely, a sterile banana will experience a genetic accident that allows an almost normal seed to develop, giving breeders a tiny window for improvement. Breeders at the Honduran Foundation of Agricultural Research have tried to exploit this to create disease-resistant varieties. Further backcrossing with wild bananas yielded a new seedless banana resistant to both black Sigatoka and Panama disease.

Neither Western supermarket consumers nor peasant growers like the new hybrid. Some accuse it of tasting more like an apple than a banana. Not surprisingly, the majority of plant breeders have until now turned their backs on the banana and got to work on easier plants. And commercial banana companies are now washing their hands of the whole breeding effort, preferring to fund a search for new fungicides instead. "We supported a breeding programme for 40 years, but it wasn't able to develop an alternative to Cavendish. It was very expensive and we got nothing back," says Ronald Romero, head of research at Chiquita, one of the Big Three companies that dominate the international banana trade.

Last year, a global consortium of scientists led by Frison announced plans to sequence the banana genome within five years. It would be the first edible fruit to be sequenced. Well, almost edible. The group will actually be sequencing inedible wild bananas from East Asia because many of these are resistant to black Sigatoka. If they can pinpoint the genes that help these wild varieties to resist black Sigatoka, the protective genes could be introduced into laboratory tissue cultures of cell from edible varieties. These could then be propagated into new, resistant plants and passed on to farmers.

It sounds promising, but the big banana companies have, until now, refused to get involved in GM research for fear of alienating their customers. "Biotechnology is extremely expensive and there are serious questions about consumer acceptance," says David McLaughlin, Chiquita's senior director for environmental affairs. With scant funding from the companies, the banana genome researchers are focusing on the other end of the spectrum. Even if they can identify the crucial genes, they will be a long way from developing new varieties that smallholders will find suitable and affordable. But whatever biotechnology's academic interest, it is the only hope for the banana. Without it, banana production worldwide will head into a tailspin. We may even see the extinction of the banana as both a lifesaver for hungry and impoverished Africans and as the most popular product on the world's supermarket shelves.

Questions 1-3

Complete the sentences below with NO MORE THAN THREE WORDS from the passage. Write your answers in boxes 1-3 on your answer sheet.

1. The banana was first eaten as a fruit by humans almost.....years ago.
2. Bananas were first planted in
3. The taste of wild bananas is adversely affected by its.....

Questions 4-10

Look at the following statements (Questions 4-10) and the list of people below. Match each statement with the correct person, A-F. Write the correct letter, A-F, in boxes 4-10 on your answer sheet. NB You may use any letter more than once.

4. A pest invasion may seriously damage the banana industry.
5. The effect of fungal infection in soil is often long-lasting.
6. A commercial manufacturer gave up on breeding bananas for disease resistant species.
7. Banana disease may develop resistance to chemical sprays.
8. A banana disease has destroyed a large number of banana plantations.
9. Consumers would not accept genetically altered crop.
10. Lessons can be learned from bananas for other crops.

List of people

- A Rodomiro Oritz
B David McLaughlin
C Emile Frison
D Ronald Romero
E Luadir Gasparotto
F Geoff Hawtin

Questions 11-13

Do the following statements agree with the information given in Reading Passage 1? In boxes 11-13 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

11. The banana is the oldest known fruit.
12. The Gros Michel is still being used as a commercial product.
13. Banana is the main food in some countries.

Passage 2 – Spend 20 minutes. Questions 14-26**Coastal Archaeology of Britain**

The recognition of the wealth and diversity of England's coastal archaeology has been one of the most important developments of recent years. Some elements of this enormous resource have long been known. The so-called 'submerged forests' off the coasts of England, sometimes with clear evidence of human activity, had attracted the interest of antiquarians since at least the eighteenth century, but serious and systematic attention has been given to the archaeological potential of the coast only since the early 1980s.

It is possible to trace a variety of causes for this concentration of effort and interest. In the 1980s and 1990s scientific research into climate change and its environmental impact spilled over into a much broader public debate as awareness of these issues grew; the prospect of rising sea levels over the next century, and their impact on current coastal environments, has been a particular focus for concern. At the same time archaeologists were beginning to recognise that the destruction caused by natural processes of coastal erosion and by human activity was having an increasing impact on the archaeological resource of the coast.

The dominant process affecting the physical form of England in the post-glacial period has been the rise in the altitude of sea level relative to the land, as the glaciers melted and the landmass re-adjusted. The encroachment of the sea, the loss of huge areas of land now under the North Sea and the English Channel, and especially the loss of the land bridge between England and France, which finally made Britain an island, must have been immensely significant factors in the lives of our prehistoric ancestors. Yet the way in which prehistoric communities adjusted to these environmental changes has seldom been a major theme in discussions of the period. One factor contributing to this has been that, although the rise in relative sea level is comparatively well documented, we know little about the constant reconfiguration of the coastline. This was affected by many processes, mostly quite localised, which have not yet been adequately researched. The detailed reconstruction of coastline histories and the changing environments available for human use will be an important theme for future research.

So great has been the rise in sea level and the consequent regression of the coast that much of the archaeological evidence now exposed in the coastal zone, whether being eroded or exposed as a buried land surface, is derived from what was originally terrestrial occupation. Its current location in the coastal zone is the product of later

unrelated processes, and it can tell us little about past adaptation to the sea. Estimates of its significance will need to be made in the context of other related evidence from dry land sites. Nevertheless, its physical environment means that preservation is often excellent, for example in the case of the Neolithic structure excavated at the Stumble in Essex.

In some cases these buried land surfaces do contain evidence for human exploitation of what was a coastal environment, and elsewhere along the modern coast there is similar evidence. Where the evidence does relate to past human exploitation of the resources and the opportunities offered by the sea and the coast, it is both diverse and as yet little understood. We are not yet in a position to make even preliminary estimates of answers to such fundamental questions as the extent to which the sea and the coast affected human life in the past, what percentage of the population at any time lived within reach of the sea, or whether human settlements in coastal environments showed a distinct character from those inland.

The most striking evidence for use of the sea is in the form of boats, yet we still have much to learn about their production and use. Most of the known wrecks around our coast are not unexpectedly of post-medieval date, and offer an unparalleled opportunity for research, which has as yet been little used. The prehistoric sewn-plank boats such as those from the Humber estuary and Dover all seem to belong to the second millennium BC; after this there is a gap in the record of a millennium, which cannot yet be explained, before boats reappear, but built using a very different technology. Boatbuilding must have been an extremely important activity around much of our coast, yet we know almost nothing about it. Boats were some of the most complex artefacts produced by pre-modern societies, and further research on their production and use make an important contribution to our understanding of past attitudes to technology and technological change.

Boats needed landing places, yet here again our knowledge is very patchy. In many cases the natural shores and beaches would have sufficed, leaving little or no archaeological trace, but especially in later periods, many ports and harbours, as well as smaller facilities such as quays, wharves, and jetties, were built. Despite a growth of interest in the waterfront archaeology of some of our more important Roman and medieval towns, very little attention has been paid to the multitude of smaller landing places. Redevelopment of harbour sites and other development and natural pressures along the coast are subjecting these important locations to unprecedented threats, yet few surveys of such sites have been undertaken.

One of the most important revelations of recent research has been the extent of industrial activity along the coast. Fishing and salt production are among the better documented activities, but even here our knowledge is patchy. Many forms of fishing will leave little archaeological trace, and one of the surprises of recent survey has been the extent of past investment in facilities for procuring fish and shellfish. Elaborate wooden fish weirs, often of considerable extent and responsive to aerial photography in shallow water, have been identified in areas such as Essex and the Severn estuary. The production of salt, especially in the late Iron Age and early Roman periods, has been recognised for some time, especially in the Thames estuary and around the Solent and Poole Harbour, but the reasons for the decline of that industry and the nature of later coastal salt working are much less well understood. Other industries were also located along the coast, either because the raw materials outcropped there or for ease of working and transport: mineral resources such as sand, gravel, stone, coal, ironstone, and alum were all exploited. These industries are poorly documented, but their remains are sometimes extensive and striking.

Some appreciation of the variety and importance of the archaeological remains preserved in the coastal zone, albeit only in preliminary form, can thus be gained from recent work, but the complexity of the problem of managing that resource is also being realised. The problem arises not only from the scale and variety of the archaeological remains, but also from two other sources: the very varied natural and human threats to the resource, and the complex web of organisations with authority over, or interests in, the coastal zone. Human threats include the redevelopment of historic towns and old dockland areas, and the increased importance of the coast for the leisure and tourism industries, resulting in pressure for the increased provision of facilities such as marinas. The larger size of ferries has also caused an increase in the damage caused by their wash to fragile deposits in the intertidal zone. The most significant natural threat is the predicted rise in sea level over the next century, especially in the south and east of England. Its impact on archaeology is not easy to predict, and though it is likely to be highly localised, it will be at a scale much larger than that of most archaeological sites. Thus protecting one site may simply result in transposing the threat to a point further along the coast. The management of the archaeological remains will have to be considered in a much longer time scale and a much wider geographical scale than is common in the case of dry land sites, and this will pose a serious challenge for archaeologists.

Questions 14-16

Choose the correct letter, A, B, C or D. Write answers in boxes 14-16 on your sheet.

14. What has caused public interest in coastal archaeology in recent years?
 - A. The rapid development of England's coastal archaeology
 - B. The rising awareness of climate change
 - C. The discovery of an underwater forest
 - D. The systematic research conducted on coastal archaeological findings
15. What does the passage say about the evidence of boats?
 - A. There's enough knowledge of the boatbuilding technology of the prehistoric people.
 - B. Many of the boats discovered were found in harbours.
 - C. The use of boats had not been recorded for a thousand years.
 - D. Boats were first used for fishing.
16. What can be discovered from the air?
 - A. Salt mines
 - B. Roman towns
 - C. Harbours
 - D. Fisheries

QUESTIONS 17-23

Do the following statements agree with the information given in 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

17. England lost much of its land after the Ice Age due to the rising sea level.
18. The coastline of England has changed periodically.
19. Coastal archaeological evidence may be well-protected by sea water.
20. The design of boats used by pre-modern people was very simple.
21. Similar boats were also discovered in many other European countries.
22. There are few documents relating to mineral exploitation.
23. Large passenger boats are causing increasing damage to the seashore.

Questions 24-26

Choose THREE letters from A-G. Write your answer in boxes 24-26 on your answer sheet. Which THREE of the following statements are mentioned in the passage?

- A How coastal archaeology was originally discovered.
- B It is difficult to understand how many people lived close to the sea.
- C How much the prehistoric communities understand the climate change.
- D Our knowledge of boat evidence is limited.
- E Some fishing grounds were converted to ports.
- F Human development threatens the archaeological remains.
- G Coastal archaeology will become more important in the future.

Passage 3**Travel Books**

There are many reasons why individuals have traveled beyond their own societies. Some travelers may have simply desired to satisfy curiosity about the larger world. Until recent times, however, did travelers start their journey for reasons other than mere curiosity. While the travelers' accounts give much valuable information on these foreign lands and provide a window for the understanding of the local cultures and histories, they are also a mirror to the travelers themselves, for these accounts help them to have a better understanding of themselves.

Records of foreign travel appeared soon after the invention of writing, and fragmentary travel accounts appeared in both Mesopotamia and Egypt in ancient times. After the formation of large, imperial states in the classical world, travel accounts emerged as a prominent literary genre in many lands, and they held especially strong appeal for rulers desiring useful knowledge about their realms. The Greek historian Herodotus reported on his travels in Egypt and Anatolia in researching the history of the Persian wars. The Chinese envoy Zhang Qian described much of central Asia as far west as Bactria (modern-day Afghanistan) on the basis of travels undertaken in the first century BCE while searching for allies for the Han dynasty. Hellenistic and Roman geographers such as Ptolemy, Strabo, and Pliny the Elder relied on their own travels through much of the Mediterranean world as well as reports of other travelers to compile vast compendia of geographical knowledge.

During the postclassical era (about 500 to 1500 CE), trade and pilgrimage emerged as major incentives for travel to foreign lands. Muslim merchants sought trading opportunities throughout much of the eastern hemisphere. They described lands, peoples, and commercial products of the Indian Ocean basin from east Africa to Indonesia, and they supplied the first written accounts of societies in Sub-Saharan West Africa. While merchants set out in search of trade and profit, devout Muslims traveled as pilgrims to Mecca to make their hajj and visit the holy sites of Islam. Since the prophet Muhammad's original pilgrimage to Mecca, untold millions of Muslims have followed his example, and thousands of hajj accounts have related their experiences. East Asian travelers were not quite so prominent as Muslims during the postclassical era, but they too followed many of the highways and sea lanes of the eastern hemisphere. Chinese merchants frequently visited southeast Asia and India, occasionally venturing even to east Africa, and devout East Asian Buddhists undertook distant pilgrimages. Between the 5th and 9th centuries CE, hundreds and possibly even thousands of Chinese Buddhists traveled to India to study with Buddhist teachers,

collect sacred texts, and visit holy sites. Written accounts recorded the experiences of many pilgrims, such as Faxian, Xuanzang, and Yijing. Though not so numerous as the Chinese pilgrims, Buddhists from Japan, Korea, and other lands also ventured abroad in the interests of spiritual enlightenment.

Medieval Europeans did not hit the roads in such large numbers as their Muslim and East Asian counterparts during the early part of the postclassical era, although gradually increasing crowds of Christian pilgrims flowed to Jerusalem, Rome, Santiago de Compostela (in northern Spain), and other sites. After the 12th century, however, merchants, pilgrims, and missionaries from medieval Europe traveled widely and left numerous travel accounts, of which Marco Polo's description of his travels and sojourn in China is the best known. As they became familiar with the larger world of the eastern hemisphere—and the profitable commercial opportunities that it offered—European people worked to find new and more direct routes to Asian and African markets. Their efforts took them not only to all parts of the eastern hemisphere, but eventually to the Americas and Oceania as well.

If Muslim and Chinese peoples dominated travel and travel writing in postclassical times, European explorers, conquerors, merchants, and missionaries took center stage during the early modern era (about 1500 to 1800 CE). By no means did Muslim and Chinese travel come to a halt in early modern times. But European peoples ventured to the distant corners of the globe, and European printing presses churned out thousands of travel accounts that described foreign lands and peoples for a reading public with an apparently insatiable appetite for news about the larger world. The volume of travel literature was so great that several editors, including Giambattista Ramusio, Richard Hakluyt, Theodore de Bry, and Samuel Purchas, assembled numerous travel accounts and made them available in enormous published collections.

During the 19th century, European travelers made their way to the interior regions of Africa and the Americas, generating a fresh round of travel writing as they did so. Meanwhile, European colonial administrators devoted numerous writings to the societies of their colonial subjects, particularly in Asian and African colonies they established. By midcentury, attention was flowing also in the other direction. Painfully aware of the military and technological prowess of European and Euro-American societies, Asian travelers in particular visited Europe and the United States in hopes of discovering principles useful for the reorganisation of their own societies. Among the most prominent of these travelers who made extensive use of their overseas

observations and experiences in their own writings were the Japanese reformer Fukuzawa Yukichi and the Chinese revolutionary Sun Yat-sen.

With the development of inexpensive and reliable means of mass transport, the 20th century witnessed explosions both in the frequency of long-distance travel and in the volume of travel writing. While a great deal of travel took place for reasons of business, administration, diplomacy, pilgrimage, and missionary work, as in ages past, increasingly effective modes of mass transport made it possible for new kinds of travel to flourish. The most distinctive of them was mass tourism, which emerged as a major form of consumption for individuals living in the world's wealthy societies. Tourism enabled consumers to get away from home to see the sights in Rome, take a cruise through the Caribbean, walk the Great Wall of China, visit some wineries in Bordeaux, or go on safari in Kenya. A peculiar variant of the travel account arose to meet the needs of these tourists: the guidebook, which offered advice on food, lodging, shopping, local customs, and all the sights that visitors should not miss seeing. Tourism has had a massive economic impact throughout the world, but other new forms of travel have also had considerable influence in contemporary times.

(**peoples** – The human beings of a particular nation , community or ethnic group)

Anywhere else the use of the word peoples is wrong

Questions 27-28

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

27 What were most people traveling for in the early days?

- A Studying their own cultures
- B Business
- C Knowing other people and places better
- D Writing travel books

28. Why did the author say writing travel books is also "a mirror" for travelers themselves?

- A Because travelers record their own experiences.
- B Because travelers reflect upon their own society and life.
- C Because it increases knowledge of foreign cultures.
- D Because it is related to the development of human society.

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Questions 29-36

Complete the table below. Write NO MORE THAN TWO WORDS from passage 3

TIME	TRAVELER	DESTINATION	PURPOSE OF TRAVEL
Classical Greece	Herodotus	Egypt and Anatolia	To gather information for the study of 29
Han Dynasty	Zhang Qian	Central Asia	To seek 30
Roman Empire	Ptolemy, Strabo, Pliny the Elder	Mediterranean	To acquire 31.....
Post-classical Era (about 500 to 1500 CE)	Muslims	From east Africa to Indonesia Mecca	Trading and 32
5th to 9th centuries CE	Chinese Buddhists	33	To collect Buddhist texts and for spiritual enlightenment
Early modern era (about 1500 to 1800CE)	European explorers	New World	To satisfy public curiosity for the New World
During 19th century	Colonial administrator	Asia, Africa	To provide information for the 34 they set up
By the mid-century of the 1900s	Sun Yat-sen Fukuzawa Yukichi	Europe and United States	To study the 35..... for the reorganization of their societies
20th century	People from 36 countries	Mass tourism	Entertainment and pleasure

Questions 37-40

Choose the correct letter, A, B, C or D. Write your answers in boxes 37-40

- 37 Why were the imperial rulers especially interested in these travel stories?
- A Reading travel stories was a popular pastime.
 - B The accounts are often truthful rather than fictional.
 - C Travel books played an important role in literature.
 - D They desired knowledge of their empire.
- 38 Who were the largest group to record their spiritual trip during the postclassical era?
- A Muslim traders
 - B Muslim pilgrims
 - C Chinese Buddhists
 - D Indian Buddhist teachers
- 39 During the early modern era, a large number of travel books were published to
- A Meet the public's interest.
 - B Explore new business opportunities.
 - C Encourage trips to the new world.
 - D Record the larger world.
- 40 What's the main theme of the passage?
- A The production of travel books
 - B The literary status of travel books
 - C The historical significance of travel books
 - D The development of travel books

READING TEST 2**Passage one – spend 20 minutes****Ambergris***What is it and where does it come from?*

Ambergris was used to perfume cosmetics in the days of ancient Mesopotamia and almost every civilization on the earth has a brush with Ambergris. Before 1,000 AD, the Chinese names ambergris as *lung sien hiang*, "dragon's spittle perfume," as they think that it was produced from the drooling of dragons sleeping on rocks at the edge of a sea. The Arabs knew ambergris as *anbar* who believed that it is produced from springs near seas. It also gets its name from here. For centuries, this substance has also been used as a flavouring for food.

During the Middle Ages, Europeans used ambergris as a remedy for headaches, colds, epilepsy, and other ailments. In the 1851 whaling novel *Moby-Dick*, Herman Melville claimed that ambergris was "largely used in perfumery." But nobody ever knew where it really came from. Experts were still guessing its origin thousands of years later, until the long ages of guesswork ended in the 1720's, when Nantucket whalers found gobs of the costly material inside the stomachs of sperm whales. Industrial whaling quickly burgeoned. By 20th century ambergris is mainly recovered from inside the carcasses of sperm whales.

Through countless ages, people have found pieces of ambergris on sandy beaches. It was named *grey amber* to distinguish it from golden amber, another rare treasure. Both of them were among **the** most sought-after substances in the world, almost as valuable as gold. (Ambergris sells for roughly \$20 a gram, slightly less than gold at \$30 a gram.) Amber floats in salt water, and in old times the origin of both these substances was mysterious. But it turned out that amber and ambergris have little in common. Amber is a fossilized resin from trees that was quite familiar to Europeans long before the discovery of the New World, and prized for jewelry. Although considered a gem, amber is a hard, transparent, wholly-organic material derived from the resin of extinct species of trees, mainly pines.

To the earliest Western chroniclers, ambergris was variously thought to come from the same bituminous sea founts as amber, from the sperm of fishes or whales, from the droppings of strange sea birds (probably because of confusion over the included beaks of squid) or from the large hives of bees living near the sea. Marco Polo was the first Western chronicler who correctly attributed ambergris to sperm whales and its vomit.

As sperm whales navigate in the oceans, they often dive down to 2 km or more below the sea level to prey on squid, most famously the Giant Squid. It's commonly accepted that ambergris forms in the whale's gut or intestines as the creature attempts to "deal" with squid beaks. Sperm whales are rather partial to squid, but seemingly struggle to digest the hard, sharp, parrot-like beaks. It is thought their stomach juices become hyperactive trying to process the irritants, and eventually hard, resinous lumps are formed around the beaks, and then expelled from their innards by vomiting. When a whale initially vomits up ambergris, it is soft and has a terrible smell. Some marine biologists compare it to the unpleasant smell of cow dung. But after floating on the salty ocean for about a decade, the substance hardens with air and sun into a smooth, waxy, usually rounded piece of nostril heaven. The dung smell is gone, replaced by a sweet, smooth, musky and pleasant earthy aroma.

Since ambergris is derived from animals, naturally a question of ethics arises, and in the case of ambergris, it is very important to consider. Sperm whales are an endangered species, whose populations started to decline as far back as the 19th century due to the high demand for their highly emollient oil, and today their stocks still have not recovered. During the 1970's, the *Save the Whales* movement brought the plight of whales to international recognition. Many people now believe that whales are "saved". This couldn't be further from the truth. All around the world, whaling still exists. Many countries continue to hunt whales, in spite of international treaties to protect them. Many marine researchers are concerned that even the trade in naturally found ambergris can be harmful by creating further incentives to hunt whales for this valuable substance.

One of the forms ambergris is used today is as a valuable fixative in perfumes to enhance and prolong the scent. But nowadays, since ambergris is rare and expensive, and big fragrance suppliers that make most of the fragrances on the market today do not deal in it for reasons of cost, availability and murky legal issues, most perfumeries prefer to add a chemical derivative which mimics the properties of ambergris. As a fragrance consumer, you can assume that there is no natural ambergris in your perfume bottle, unless the company advertises this fact and unless you own vintage fragrances created before the 1980s. If you are wondering if you have been wearing a perfume with this legendary ingredient, you may want to review your scent collection. Here are a few of some of the top ambergris containing perfumes: Givenchy Amarige, Chanel No. 5, and Gucci Guilty.

Questions 1-6

Classify the following information as referring to

- A ambergris only
- B amber only
- C both ambergris and amber
- D neither ambergris nor amber

Write the correct letter, A, B, C, or D in boxes 1-6 on your answer sheet.

- 1. being expensive
- 2. adds flavor to food
- 3. used as currency
- 4. being see-through
- 5. referred to by Herman Melville
- 6. produces sweet smell

Questions 7-9

Complete the sentences below with NO MORE THAN ONE WORD from the passage. Write your answers in boxes 7-9 on your answer sheet.

- 7 Sperm whales can't digest the ___ of the squids.
- 8 Sperm whales drive the irritants out of their intestines by ___.
- 9 The vomit of sperm whale gradually ___ on contact of air before having pleasant smell.

Questions 10-13

Do the following statements agree with the information given in Reading Passage 1?

In boxes 10-13 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

- 10 Most ambergris comes from the dead whales today.
- 11 Ambergris is becoming more expensive than before.
- 12 Ambergris is still a popular ingredient in perfume production today.
- 13 New uses of ambergris have been discovered recently.

makkariELTS Fun Fact

Every student reads approx 2100 to 2800 words during the IELTS Reading exam

READING PASSAGE 2

You should spend about 20 minutes on Questions 14-26

Questions 14-20

Reading passage 2 has seven paragraphs, A-G. Choose the correct heading for each paragraph from the list of headings below. Write the correct number, i-xi, in boxes 14-20 on your answer sheet.

List of Headings

- i. Why better food helps students' learning
- ii. Becoming the headmaster of Msekeni
- iii. Surprising use of school premises
- iv. Global perspective
- v. Why students were undernourished
- vi. Surprising academic outcome
- vii. An innovative program to help girls
- viii. How food program is operated
- ix. How food program affects school attendance
- x. None of the usual reasons
- xi. How to maintain academic standard

14 Paragraph A

15 Paragraph B

16 Paragraph C

17 Paragraph D

18 Paragraph E

19 Paragraph F

20 Paragraph G

Tackling Hunger in Msekeni

- A. There are not enough classrooms at the Msekeni primary school, so half the lessons take place in the shade of yellow-blossomed acacia trees. Given this shortage, it might seem odd that one of the school's purpose-built classrooms has been emptied of pupils and turned into a storeroom for sacks of grain. But it makes sense. Food matters more than shelter.
- B. Msekeni is in one of the poorer parts of Malawi, a landlocked southern African country of exceptional beauty and great poverty. No war lays waste Malawi, nor is the land unusually crowded or infertile, but Malawians still have trouble finding enough to eat. Half of the children under five are underfed to the point of stunting.

Hunger blights most aspects of Malawian life, so the country is as good a place as any to investigate how nutrition affects development, and vice versa.

- C. The headmaster at Msekeni, Bernard Kumanda, has strong views on the subject. He thinks food is a priceless teaching aid. Since 1999, his pupils have received free school lunches. Donors such as the World Food Programme (WFP) provide the food: those sacks of grain (mostly mixed maize and soyabean flour, enriched with vitamin A) in that converted classroom. Local volunteers do the cooking—turning the dry ingredients into a bland but nutritious slop, and spooning it out on to plastic plates. The children line up in large crowds, cheerfully singing a song called "We are getting porridge".
- D. When the school's feeding programme was introduced, enrolment at Msekeni doubled. Some of the new pupils had switched from nearby schools that did not give out free porridge, but most were children whose families had previously kept them at home to work. These families were so poor that the long-term benefits of education seemed unattractive when set against the short-term gain of sending children out to gather firewood or help in the fields. One plate of porridge a day completely altered the calculation. A child fed at school will not howl so plaintively for food at home. Girls, who are more likely than boys to be kept out of school, are given extra snacks to take home.
- E. When a school takes in a horde of extra students from the poorest homes, you would expect standards to drop. Anywhere in the world, poor kids tend to perform worse than their better-off classmates. When the influx of new pupils is not accompanied by any increase in the number of teachers, as was the case at Msekeni, you would expect standards to fall even further. But they have not. Pass rates at Msekeni improved dramatically, from 30% to 85%. Although this was an exceptional example, the nationwide results of school feeding programmes were still pretty good. On average, after a Malawian school started handing out free food it attracted 38% more girls and 24% more boys. The pass rate for boys stayed about the same, while for girls it improved by 9.5%.
- F. Better nutrition makes for brighter children. Most immediately, well-fed children find it easier to concentrate. It is hard to focus the mind on long division when your stomach is screaming for food. Mr Kumanda says that it used to be easy to spot the kids who were really undernourished. "They were the ones who stared into space and didn't respond when you asked them questions," he says. More crucially, though, more and better food helps brains grow and develop. Like any

other organ in the body, the brain needs nutrition and exercise. But if it is starved of the necessary calories, proteins and micronutrients, it is stunted, perhaps not as severely as a muscle would be, but stunted nonetheless. That is why feeding children at schools works so well. And the fact that the effect of feeding was more pronounced on girls than on boys gives a clue to who eats first in rural Malawian households. It isn't the girls.

G. On a global scale, the good news is that people are eating better than ever before. Homo sapiens has grown 50% bigger since the industrial revolution. Three centuries ago, chronic malnutrition was more or less universal. Now, it is extremely rare in rich countries. In developing countries, where most people live, plates and rice bowls are also fuller than ever before. The proportion of children under five in the developing world who are malnourished to the point of stunting fell from 39% in 1990 to 30% in 2000, says the World Health Organisation (WHO). In other places, the battle against hunger is steadily being won. Better nutrition is making people cleverer and more energetic, which will help them grow more prosperous. And when they eventually join the ranks of the well-off, they can start fretting about growing too fat.

Questions 21-24

Complete the sentences below using **NO MORE THAN TWO WORDS / OR A NUMBER** from the passage. Write your answers in boxes 21-24 on your answer sheet.

- 21 In Kumanda's school _____ are given to girls after the end of the school day.
- 22 Many children from poor families were sent to collect _____ from the field.
- 23 Thanks to the free food program, _____ of students passed the test.
- 24 The modern human is _____ bigger than before after the industrial revolution.

Questions 25-26

Choose **TWO** letters, A-E Write the correct letters in boxes 25 and 26 on your answer sheet.

Which **TWO** of the following statements are true?

- A. Some children are taught in the open air.
- B. Bernard Kumanda became the headmaster in 1991.
- C. No new staffs were recruited when attendance rose.
- D. Girls are often treated equally with boys in Malawi.
- E. Scientists have devised ways to detect the most underfed students in school.
- F. WHO is worried about malnutrition among kids in developing countries.

Reading Passage 3 Spend 20 minutes on questions 27-40

Placebo effect – The Power of Nothing

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

Well yes, it could—and often well enough to earn you a living. A good living if you are sufficiently convincing or, better still, really believe in your therapy. Many illnesses get better on their own, so if you are lucky and administer your treatment at just the right time you'll get the credit. But that's only part of it. Some of the improvement really would be down to you. Not necessarily because you'd recommended ginseng rather than camomile tea or used this crystal as opposed to that pressure point. Nothing so specific. Your healing power would be the outcome of a paradoxical force that conventional medicine recognises but remains oddly ambivalent about: the placebo effect.

Placebos are treatments that have no direct effect on the body, yet still work because the patient has faith in their power to heal. Most often the term refers to a dummy pill, but it applies just as much to any device or procedure, from a sticking plaster to a crystal to an operation. The existence of the placebo effect implies that even quackery may confer real benefits, which is why any mention of placebo is a touchy subject for many practitioners of complementary and alternative medicine (CAM), who are likely to regard it as tantamount to a charge of charlatanism. In fact, the placebo effect is a powerful part of all medical care, orthodox or otherwise, though its role is often neglected and misunderstood.

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

At one level, it should come as no surprise that our state of mind can influence our physiology: anger opens the superficial blood vessels of the face; sadness pumps the tear glands. But exactly how placebos work their medical magic is still largely unknown. Most of the scant research to date has focused on the control of pain, because it's one of the commonest complaints and lends itself to experimental study. Here, attention has turned to the endorphins, natural counterparts of morphine that are known to help control pain. "Any of the neurochemicals involved in transmitting pain impulses or modulating them might also be involved in generating the placebo response," says Don Price, an oral surgeon at the University of Florida who studies the placebo effect in dental pain.

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

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

It matters, too, how the treatment is delivered. Decades ago, when the major tranquilliser chlorpromazine was being introduced, a doctor in Kansas categorised his colleagues according to whether they were keen on it, openly sceptical of its benefits, or took a "let's try and see" attitude. His conclusion: the more enthusiastic the doctor, the better the drug performed. And this year Ernst surveyed published studies that compared doctors' bedside manners. The studies turned up one consistent finding: "Physicians who adopt a warm, friendly and reassuring manner," he reported, "are

more effective than those whose consultations are formal and do not offer reassurance."

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

Questions 27-32

Complete the following sentences with the correct ending. Choose the correct letter, A-H, for each sentence below. Write your answers in boxes 27-32 on your answer sheet.

- 27 Appointments with alternative practitioner
- 28 An alternative practitioner's description of treatment
- 29 An alternative practitioner who has faith in what he does
- 30 The illness of patients convinced of alternative practice
- 31 Improvements of patients receiving alternative practice
- 32 Conventional medical doctors
 - A. should be easy to understand.
 - B. ought to improve by itself.
 - C. should not involve any mysticism.
 - D. ought to last a minimum length of time.
 - E. needs to be treated at the right time.
 - F. should give more recognition.
 - G. can earn high income.
 - H. do not rely on any specific treatment.

**To find out which writing Task came in the exam, please visit our
facebook page facebook.com/makkariELTS after the exam**

Questions 33-35

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

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

- A. people's feelings could affect their physical behavior.
- B. how placebo achieves its effect is yet to be understood.
- C. scientists don't understand how the mind influences the body.
- D. research on the placebo effect is very limited.

34. Research on pain control attracts most of the attention because

- A. only a limited number of researches have been conducted so far.
- B. scientists have discovered that endorphins can help to reduce pain.
- C. pain reducing agents might also be involved in placebo effect.
- D. patients often experience pain and like to complain about it.

35. Fabrizio Benedetti's research on endorphins indicates that

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

Questions 36-40

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. There is enough information for scientists to fully understand the placebo effect.

37. A London based researcher discovered that red pills should be taken off the market.

38. People's preference on brands would also have effect on their healing.

39. Medical doctors have a range of views of the newly introduced drug of chlorpromazine.

40. Alternative practitioners are seldom known for applying placebo effect.

Reading test 3**Passage 1 – spend 20 minutes****GOING NOWHERE FAST**

THIS is ludicrous! We can talk to people anywhere in the world or fly to meet them in a few hours. We can even send probes to other planets. But when it comes to getting around our cities, we depend on systems that have scarcely changed since the days of Gottlieb Daimler.

In recent years, the pollution belched out by millions of vehicles has dominated the debate about transport. The problem has even persuaded California - that home of car culture - to curb traffic growth. But no matter how green they become, cars are unlikely to get us around crowded cities any faster. And persuading people to use trains and buses will always be an uphill struggle. Cars, after all, are popular for very good reasons, as anyone with small children or heavy shopping knows.

So politicians should be trying to lure people out of their cars, not forcing them out. There's certainly no shortage of alternatives. Perhaps the most attractive is the concept known as personal rapid transit (PRT), independently invented in the US and Europe in the 1950s.

The idea is to go to one of many stations and hop into a computer-controlled car, which can whisk you to your destination along a network of guideways. You wouldn't have to share your space with strangers, and with no traffic lights, pedestrians or parked cars to slow things down, PRT guideways can carry far more traffic, nonstop, than any inner city road.

It's a wonderful vision, but the odds are stacked against PRT for a number of reasons. The first cars ran on existing roads, and it was only after they became popular – and after governments started earning revenue from them – that a road network designed specifically for motor vehicles was built. With PRT, the infrastructure would have to come first – and that would cost megabucks. What's more, any transport system that threatened the car's dominance would be up against all those with a stake in maintaining the status quo, from private car

owners to manufacturers and oil multinationals. Even if PRTs were spectacularly successful in trials, it might not make much difference. Superior technology doesn't always triumph, as the VHS versus Betamax and Windows versus Apple Mac battles showed.

But "dual-mode" systems might just succeed where PRT seems doomed to fail. The Danish RUF system envisaged by Palle Jensen, for example, resembles PRT but with one key difference: vehicles have wheels as well as a slot allowing them to travel on a monorail, so they can drive off the rail onto a normal road. Once on a road, the occupant would take over from the computer, and the RUF vehicle - the term comes from a Danish saying meaning to "go fast" - would become an electric car.

Build a fast network of guideways in a busy city centre and people would have a strong incentive not just to use public RUF vehicles, but also to buy their own dual-mode vehicle. Commuters could drive onto the guideway, sit back and read as they are chauffeured into the city. At work, they would jump out, leaving their vehicles to park themselves. Unlike PRT, such a system could grow organically, as each network would serve a large area around it and people nearby could buy into it. And a dual-mode system might even win the support of car manufacturers, who could easily switch to producing dual-mode vehicles.

Of course, creating a new transport system will not be cheap or easy. But unlike adding a dedicated bus lane here or extending the underground railway there, an innovative system such as Jensen's could transform cities.

And it's not just a matter of saving a few minutes a day. According to the Red Cross, more than 30 million people have died in road accidents in the past century-three times the number killed in the First World War-and the annual death toll is rising. And what's more, the Red Cross believes road accidents will become the third biggest cause of death and disability by 2020, ahead of diseases such as AIDS and tuberculosis. Surely we can find a better way to get around?

Questions 1-6

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

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 City transport developed slower than other means of communication.
- 2 The pollution caused by city transport has been largely ignored.
- 3 Most states in America have taken actions to reduce vehicle growth.
- 4 Public transport is particularly difficult to use on steep hills.
- 5 Private cars are much more convenient for those who tend to buy a lot of things during shopping.
- 6 Government should impose compulsory restrictions on car use.

Questions 7-12 Classify the following descriptions as referring to

- A PRT only
- B RUF only
- C both PRT and RUF

Write the correct letter, A, B, or C in boxes 7-12 on your answer sheet.

- 7 It is likely to be resisted by both individuals and manufacturers.
- 8 It can run at high speed in cities.
- 9 It is not necessary to share with the general public.
- 10 It is always controlled by a computer.
- 11 It can run on existing roads.
- 12 It can be bought by private buyers.

Question 13

Choose THREE letters, A-G. Which THREE of the following are advantages of the new transport system?

- A. economy
- B. space
- C. low pollution
- D. suitability for families
- E. speed
- F. safety
- G. suitability for children

Passage 2 – spend 20 minutes

THE SEEDHUNTERS

With Quarter of the world's plants set to vanish within the next 50 years, Dough Alexander reports on the scientists working against the clock to preserve the Earth's botanical heritage.

They travel the four corners of the globe, scouring jungles, forests and savannas. But they're not looking for ancient artefacts, lost treasure or undiscovered tombs. Just pods. It may lack the romantic allure of archaeology, or the whiff of danger that accompanies going after big game, but seed hunting is an increasingly serious business. Some seek seeds for profit — hunters in the employ of biotechnology firms, pharmaceutical companies and private corporations on the lookout for species that will yield the drugs or crops of the future. Others collect to conserve, working to halt the sad slide into extinction facing so many plant species.

Among the pioneers of this botanical treasure hunt was John Tradescant, an English royal gardener who brought back plants and seeds from his journeys abroad in the early 1600s. Later, the English botanist Sir Joseph Banks — who was the first director of the Royal Botanic Gardens at Kew and travelled with Captain James Cook on his voyages near the end of the 18th century — was so driven to expand his collections that he sent botanists around the world at his own expense.

Those heady days of exploration and discovery may be over, but they have been replaced by a pressing need to preserve our natural history for the future. This modern mission drives hunters such as Dr Michiel van Slageren, a good-natured Dutchman who often sports a wide-brimmed hat in the field — he could easily be mistaken for the cinematic hero Indiana Jones. He and three other seed hunters work at the Millennium Seed Bank, an £80million international conservation project that aims to protect the world's most endangered wild plant species.

The group's headquarters are in a modern glass-and-concrete structure on a 200-hectare estate at Wakehurst Place in the West Sussex countryside. Within its underground vaults are 260 million dried seeds from 122 countries, all stored at -20 Celsius to survive for centuries. Among the 5,100 species represented are virtually all of Britain's 1,400

native seed-bearing plants, the most complete such collection of any country's flora.

Overseen by the Royal Botanic Gardens, the Millennium Seed Bank is the world's largest wild-plant depository. It aims to collect 24,000 species by 2010. The reason is simple: thanks to humanity's efforts, an estimated 25 per cent of the world's plants are on the verge of extinction and may vanish within 50 years. We're currently responsible for habitat destruction on an unprecedented scale, and during the past 400 years, plant species extinction rates have been about 70 times greater than those indicated by the geological record as being 'normal'. Experts predict that during the next 50 years a further one billion hectares of wilderness will be converted to farmland in developing countries alone.

The implications of this loss are enormous. Besides providing staple food crops, plants are a source of many medicines and the principal supply of fuel and building materials in many parts of the world. They also protect soil and help regulate the climate. Yet, across the globe, plant species are being driven to extinction before their potential benefits are discovered.

The World Conservation Union has listed 5,714 threatened plant species worldwide, but it admits this is only scratching the surface. With only four per cent of the world's described plants having been evaluated, the true number of threatened species is sure to be much higher. In the UK alone, 300 wild plant species are classified as endangered. The Millennium Seed Bank aims to ensure that even if a plant becomes extinct in the wild, it won't be lost forever. Stored seeds can be used to help restore damaged or destroyed environments or in scientific research to find new benefits for society — in medicine, agriculture or local industry — that would otherwise be lost.

Seed banks are an 'insurance policy' to protect the world's plant heritage for the future, explains Dr. Paul Smith, another Kew seed hunter. "Seed conservation techniques were originally developed by farmers," he says. "Storage is the basis of what we do, conserving seeds until you can use them — just as in farming." Smith says there's no reason why any plant species should become extinct, given today's technology. But he admits that the biggest challenge is finding, naming and categorising all the world's plants. And someone has to gather these seeds before it's too late. "There aren't a lot of people out there doing this," he says, "The key

is to know the flora from a particular area, and that knowledge takes years to acquire."

There are about 1,470 seed banks scattered around the globe, with a combined total of 5.4 million samples, of which perhaps two million are distinct non-duplicates. Most preserve genetic material for agricultural use in order to ensure crop diversity others aim to conserve wild species, although only 15 per cent of all banked plants are wild.

Many seed banks are themselves under threat due to a lack of funds. Last year, Imperial College, London, examined crop collections from 151 countries and found that while the number of plant samples had increased in two thirds of the countries, budgets had been cut in a quarter and remained static in another 35 per cent. The UN's Food and Agriculture Organisation and the Consultative Group on International Agricultural Research has since set up the Global Conservation Trust, which aims to raise US\$260 million (£156 million) to protect seed banks in perpetuity.

Questions 14-18

Complete the summary below using **NO MORE THAN TWO WORDS** from the passage.

People collect seeds for different purposes: some collect to protect certain species from 14.....; others collect seeds for their potential to produce 15.....

They are called the seed hunters. The 16.....of them included both gardeners and botanists, such as 17....., who sponsored collectors out of his own pocket.

The seeds collected are often stored in seed banks. The most famous among them is known as the Millennium Seed Bank, where seeds are all stored in the 18.....at low temperature.

Questions 19-24

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 reason to collect seeds is different from the past.
20. The Millennium Seed Bank is one of the earliest seed banks.
21. A major reason for plant species extinction is farmland expansion.
22. The method scientists use to store seeds is similar to that used by farmers.
23. Technological development is the only hope to save plant species.
24. The works of seed conservation are often limited by insufficient financial resources.

Questions 25-26

Choose TWO letters, A-E. Write the correct letters in boxes 25 and 26 on your answer sheet. Which TWO of the following are provided by plants to the human world?

- A food
- B artefact
- C treasure
- D energy
- E clothes

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READING PASSAGE 3

Assessing the Risk

How do we judge whether it is right to go ahead with a new technology? Apply the precautionary principle properly and you won't go far wrong, says Colin Tudge.

Section 1

As a title for a supposedly unprejudiced debate on scientific progress, "Panic attack: interrogating our obsession with risk" did not bode well. Held last week at the Royal Institution in London, the event brought together scientists from across the world to ask why society is so obsessed with risk and to call for a "more rational" approach. "We seem to be organising society around the grandmotherly maxim of 'better safe than sorry,'" exclaimed *Spiked*, the online publication that organised the event. "What are the consequences of this overbearing concern with risks?"

The debate was preceded by a survey of 40 scientists who were invited to describe how awful our lives would be if the "precautionary principle" had been allowed to prevail in the past. Their response was: no heart surgery or antibiotics, and hardly any drugs at all; no aeroplanes, bicycles or high-voltage power grids; no pasteurisation, pesticides or bio-technology; no quantum mechanics; no wheel; no "discovery" of America. In short, their message was: no risk, no gain.

They have absolutely missed the point. The precautionary principle is a subtle idea. It has various forms, but all of them generally include some notion of cost-effectiveness. Thus the point is not simply to ban things that are not known to be absolutely safe. Rather, it says: "Of course you can make no progress without risk. But if there is no obvious gain from taking the risk, then don't take it."

Clearly, all the technologies listed by the 40 well-chosen savants were innately risky at their inception, as all technologies are. But all of them would have received the green light under the precautionary principle because they all had the potential to offer tremendous benefits — the solutions to very big problems — if only the snags could be overcome.

If the precautionary principle had been in place, the scientists tell us, we would not have antibiotics. But of course we would — if the version of the principle that sensible people now understand had been applied. When penicillin was discovered in the 1920s, infective bacteria were laying waste to the world. Children died from diphtheria and whooping cough, every open drain brought the threat of typhoid, and any wound could lead to septicaemia and even gangrene.

Penicillin was turned into a practical drug during the Second World War, when the many pestilences that result from war threatened to kill more people than the bombs. Of course antibiotics were a priority. Of course the risks, such as they could be perceived, were worth taking.

And so with the other items on the scientists' list: electric light bulbs, blood transfusions, CAT scans, knives, the measles vaccine — the precautionary principle would have prevented all of them, they tell us. But this is just plain wrong. If the precautionary principle had been applied properly, all these creations would have passed muster, because all offered incomparable advantages compared to the risks perceived at the time.

Section 2

Another issue is at stake here. Statistics are not the only concept people use when weighing up risk. Human beings, subtle and evolved creatures that we are, do not survive to threescore years and ten simply by thinking like pocket calculators. A crucial issue is consumer's choice. In deciding whether to pursue the development of a new technology, the consumer's right to choose should be considered alongside considerations of risk and benefit. Clearly, skiing is more dangerous than genetically modified tomatoes. But people who ski choose to do so; they do not have skiing thrust upon them by portentous experts of the kind who now feel they have the right to reconstruct our crops. Even with skiing, there is the matter of cost effectiveness to consider: skiing, I am told, is exhilarating. Where is the exhilaration in GM soya?

Indeed, in contrast to all the other items on *Spiked's* list, GM crops stand out as an example of a technology whose benefits are far from clear. Some of the risks can at least be defined. But in the present economic climate, the benefits that might accrue from them seem dubious. Promoters of GM crops believe that the future population of the world cannot be fed without them. That is untrue. The crops that really matter are wheat and rice, and there is no GM research in the pipeline that will seriously affect the yield of either. GM is used to make production cheaper and hence more profitable, which is an extremely questionable ambition.

The precautionary principle provides the world with a very important safeguard. If it had been in place in the past, it might, for example, have prevented insouciant miners from polluting major rivers with mercury. We have come to a sorry pass when scientists, who should above all be dispassionate scholars, feel they should misrepresent such a principle for the purposes of commercial and political propaganda. People at large continue to mistrust science and the high technologies

it produces, partly because they doubt the wisdom of scientists. On such evidence as this, these doubts are fully justified.

Questions 27-32

Do the following statements agree with the information given in Reading Passage 3?

- TRUE *if the statement agrees with the information*
FALSE *if the statement contradicts the information*
NOT GIVEN *if there is no information on this*

27. The title of the debate is not unbiased.
28. All the scientists invited to the debate were from the field of medicine.
29. The message those scientists who conducted the survey were sending was people shouldn't take risks.
30. All the listed technologies are riskier than other technologies.
31. It is worth taking the risks to invent antibiotics.
32. All the other inventions on the list were also judged by the precautionary principle.

Questions 33-39

Complete the summary below using **NO MORE THAN THREE WORDS** from the passage. Write your answers in boxes 33-39 on your answer sheet.

When applying precautionary principle to decide whether to invent a new technology, people should also take into consideration of the 33....., along with the usual consideration of 34..... For example, though risky and dangerous enough, people still enjoy 35.....for the excitement it provides. On the other hand, experts believe the future population desperately needs 36.....inspite of their undefined risks. However, the researches conducted so far have not been directed towards increasing the yield of 37....., but to reduce the cost of 38.....and to bring more profit out of it. In the end, such selfish use of precautionary principle for business and political gain has often led people to 39.....science for they believe scientists are not to be trusted.

Question 40

Choose the correct letter, A, B, C or D. Write your answer in box 40 on your answer sheet.

What is the main theme of the passage?

- A. People have the right to doubt science and technologies.
- B. The precautionary principle could have prevented the development of science and technology.
- C. There are not enough people who truly understand the precautionary principle.
- D. The precautionary principle bids us to take risks at all costs.

Reading test 4**Passage 1 – spend 20 minutes****The Origins Of Laughter**

While joking and wit are uniquely human inventions, laughter certainly is not. Other creatures, including chimpanzees, gorillas and even rats, laugh. The fact that they laugh suggests that laughter has been around for a lot longer than we have.

There is no doubt that laughing typically involves groups of people. "Laughter evolved as a signal to others — it almost disappears when we are alone," says Robert Provine, a neuroscientist at the University of Maryland. Provine found that most laughter comes as a polite reaction to everyday remarks such as "see you later", rather than anything particularly funny. And the way we laugh depends on the company we're keeping. Men tend to laugh longer and harder when they are with other men, perhaps as a way of bonding. Women tend to laugh more and at a higher pitch when men are present, possibly indicating flirtation or even submission.

To find the origins of laughter, Provine believes we need to look at play. He points out that the masters of laughing are children, and nowhere is their talent more obvious than in the boisterous antics, and the original context is play. Well-known primate watchers, including Dian Fossey and Jane Goodall, have long argued that chimps laugh while at play. The sound they produce is known as a pant laugh. It seems obvious when you watch their behavior — they even have the same ticklish spots as we do. But after removing the context, the parallel between human laughter and a chimp's characteristic pant laugh is not so clear. When Provine played a tape of the pant laughs to 119 of his students, for example, only two guessed correctly what it was.

These findings underline how chimp and human laughter vary- When we laugh the sound is usually produced by chopping up a single exhalation into a series of shorter with one sound produced on each inward and outward breath. The question is: does this pant laughter have the same source as our own laughter? New research lends weight to the idea that it does. The findings come from Elke Zimmerman, head of the Institute for Zoology in Germany, who compared the sounds made by babies and chimpanzees in response to tickling during the first year of their life. Using sound spectrographs to reveal the pitch and intensity of vocalizations, she discovered that chimp and human baby laughter follow broadly the same pattern. Zimmerman believes the closeness of baby laughter to chimp laughter supports the idea that laughter was around long before humans arrived on the scene. What

started simply as a modification of breathing associated with enjoyable and playful interactions has acquired a symbolic meaning as an indicator of pleasure.

Pinpointing when laughter developed is another matter. Humans and chimps share a common ancestor that lived perhaps 8 million years ago, but animals might have been laughing long before that. More distantly related primates, including gorillas, laugh, and anecdotal evidence suggests that other social mammals can do too. Scientists are currently testing such stories with a comparative analysis of just how common laughter is among animals. So far, though, the most compelling evidence for laughter beyond primates comes from research done by Jaak Panksepp from Bowling Green State University, Ohio, into the ultrasonic chirps produced by rats during play and in response to tickling.

All this still doesn't answer the question of why we laugh at all. One idea is that laughter and tickling originated as a way of sealing the relationship between mother and child. Another is that the reflex response to tickling is protective, alerting us to the presence of crawling creatures that might harm us or compelling us to defend the parts of our bodies that are most vulnerable in hand-to-hand combat. But the idea that has gained the most popularity in recent years is that laughter in response to tickling is a way for two individuals to signal and test their trust in one another. This hypothesis starts from the observation that although a little tickle can be enjoyable, if it goes on too long it can be torture. By engaging in a bout of tickling, we put ourselves at the mercy of another individual, and laughing is what makes it a reliable signal of trust, according to Tom Flamson, a laughter researcher at the University of California, Los Angeles. "Even in rats, laughter, tickle, play and trust are linked. Rats chirp a lot when they play," says Flamson. "These chirps can be aroused by tickling. And they get bonded to us as a result, which certainly seems like a show of trust."

We'll never know which animal laughed the first laugh, or why. But we can be sure it wasn't in response to a prehistoric joke. The funny thing is that while the origins of laughter are probably quite serious, we owe human laughter and our language-based humor to the same unique skill. While other animals pant, we alone can control our breath well enough to produce the sound of laughter. Without that control there would also be no speech — and no jokes to endure.

Questions 1-6

Look at the following research findings (Questions 1-6) and the list of people below. Match each finding with the correct person, A, B, C or D. Write the correct letter, A, B, C or D, in boxes 1-6 on your answer sheet. NB You may use any letter more than once.

1. Babies and some animals produce laughter which sounds similar.
2. Primates are not the only animals who produce laughter.
3. Laughter can be used to show that we feel safe and secure with others.
4. Most human laughter is not a response to a humorous situation.
5. Animal laughter evolved before human laughter.
6. Laughter is a social activity.

List of People

- A. Provine
- B. Zimmerman
- C. Panksepp
- D. Flamson

Questions 7-10

Complete the summary using the list of words, A-K, below. Write the correct letter, A-K, in boxes 7-10 on your answer sheet.

- | | | | | |
|-------------|-------------|---------------|------------|-----------|
| A. combat | B. chirps | C. pitch | D. origins | E. play |
| F. Rats | G. primates | H. confidence | I. fear | J. babies |
| K. tickling | | | | |

Some scientists believe that laughter first developed out of 7..... Research has revealed that human and chimp laughter may have the same 8..... Scientists have long been aware that 9.....laugh, but it now appears that laughter might be more widespread than once thought. Although the reasons why humans started to laugh are still unknown, it seems that laughter may result from the 10.....we feel with another person.

Questions 11-13

Do the following statements agree with the information given in Reading Passage 1? In boxes 11-13 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 |

11. Both men and women laugh more when they are with members of the same sex
12. Primates lack sufficient breath control to be able to produce laughs the way humans do.
13. Chimpanzees produce laughter in a wider range of situations than rats do.

Passage 2 – spend 20 minutes**The Lost City**

Thanks to modern remote-sensing techniques, a ruined city in Turkey is slowly revealing itself as one of the greatest and most mysterious cities of the ancient world. Sally Palmer uncovers more.

A The low granite mountain, known as Kerkenes Dag, juts from the northern edge of the Cappadocian plain in Turkey. Sprawled over the mountainside are the ruins of an enormous city, contained by crumbling defensive walls seven kilometers long. Many respected archaeologists believe these are the remains of the fabled city of Pteria, the sixth-century BC stronghold of the Medes that the Greek historian Herodotus described in his famous work *The Histories*. The short-lived city came under Median control and only fifty years later was sacked, burned and its strong stone walls destroyed.

B British archaeologist Dr Geoffrey Summers has spent ten years studying the site. Excavating the ruins is a challenge because of the vast area they cover. The 7 km perimeter walls run around a site covering 271 hectares. Dr Summers quickly realised it would take far too long to excavate the site using traditional techniques alone. So he decided to use modern technology as well to map the entire site, both above and beneath the surface, to locate the most interesting areas and priorities to start digging.

C In 1993, Dr Summers hired a special hand-held balloon with a remote-controlled camera attached. He walked over the entire site holding the balloon and taking photos. Then one afternoon, he rented a hot-air balloon and floated over the site, taking yet more pictures. By the end of the 1994 season, Dr Summers and his team had a jigsaw of aerial photographs of the whole site. The next stage was to use remote sensing, which would let them work out what lay below the intriguing outlines and ruined walls. "Archaeology is a discipline that lends itself very well to remote sensing because it revolves around space," says Scott Branting, an associated director of the project. He started working with Dr Summers in 1995.

D The project used two main remote-sensing techniques. The first is magnetometry, which works on the principle that magnetic fields at the surface of the Earth are influenced by what is buried beneath. It measures localised variations in the direction and intensity of this magnetic field. "The Earth's magnetic field can vary from place to place, depending on what happened there in the past says Branting. "If something containing iron oxide was heavily burnt, by natural or human actions, the iron particles in it can be permanently reoriented, like a compass needle, to align with the Earth's magnetic field present at that point in time and space." The magnetometer detects differences in the orientations and

intensities of these iron particles from the present-day magnetic field and uses them to produce an image of what lies below ground.

E Kerkene Dag lends itself particularly well to magnetometry because it was all burnt once in a savage fire. In places the heat was sufficient to turn sandstone to glass and to melt granite. The fire was so hot that there were strong magnetic signatures set to the Earth's magnetic field from the time - around 547 BC - resulting in extremely clear pictures. Furthermore, the city was never rebuilt. "If you have multiple layers, it can confuse pictures, because you have different walls from different periods giving signatures that all go in different directions," says Branting. "We only have one going down about 1.5 meters, so we can get a good picture of this fairly short-lived city."

F The other main sub-surface mapping technique, which is still being used at the site, is resistivity. This technique measures the way electrical pulses are conducted through sub-surface soil. It's done by shooting pulses into the ground through a thin metal probe. Different materials have different electrical conductivity. For example, stone and mudbrick are poor conductors, but looser, damp soil conducts very well. By walking around the site and taking about four readings per metre, it is possible to get a detailed idea of what is where beneath the surface. The teams then build up pictures of walls, hearths and other remains. "It helps a lot if it has rained, because the electrical pulse can get through more easily," says Branting. "Then if something is more resistant, it really shows up." This is one of the reasons that the project has a spring season, when most of the resistivity work is done. Unfortunately, testing resistivity is a lot slower than magnetometry. "If we did resistivity over the whole site it would take about 100 years," says Branting. Consequently, the team is concentrating on areas where they want to clarify pictures from the magnetometry.

G Remote sensing does not reveal everything about Kerkene Dag, but it shows the most interesting sub-surface areas of the site. The archaeologists can then excavate these using traditional techniques. One surprise came when they dug out one of the gates in the defensive walls. "Our observations in early seasons led us to assume that we were looking at a stone base from a mudbrick city wall, such as would be found at most other cities in the Ancient Near East," says Dr Summers. "When we started to excavate we were staggered to discover that the walls were made entirely from stone and that the gate would have stood at least ten metres high. After ten years of study, Pteria is gradually giving up its secrets."

Questions 14-17

Which paragraph contains the following information? Write the correct letter, A-G, in boxes 14-17 on your answer sheet.

- 14 The reason for the deployment of a variety of investigative methods
- 15 An example of an unexpected find
- 16 How the surface of the site was surveyed from above
- 17 The reason why experts are interested in the site

Questions 18-25

Complete the summary below. Choose **NO MORE THAN THREE WORDS** from the passage for each answer. Write your answers in boxes 18-25 on your answer sheet.

Exploring the ancient city of Pteria

Archaeologists began working ten years ago. They started by taking photographs of the site from the ground and then from a distance in a 18..... They focused on what lay below the surface using a magnetometer, which identifies variations in the magnetic field. These variations occur when the 19.....in buried structures have changed direction as a result of great heat. They line up with the surrounding magnetic field just as a 20.....would do.

The other remote-sensing technique employed was resistivity. This uses a 21..... to fire electrical pulses into the earth. The principle is that building materials like 22.....and stone do not conduct electricity well, while 23.....does this much more effectively. This technique is mainly employed during the 24....., when conditions are more favourable. Resistivity is mainly being used to 25..... some images generated by the magnetometer.

Question 26 Choose the correct letter, A, B, C or D. Write the correct letter in box 26 on your answer sheet. How do modern remote-sensing techniques help at the Pteria site?

- A They detect minute buried objects for the archaeologists to dig up.
- B They pinpoint key areas, which would be worth investigating closely.
- C They remove the need for archaeologists to excavate any part of the site.
- D They extend the research period as they can be used at any time of year.

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Passage 3 – spend 20 minutes

Designed to Last:

Could Better Design Cure Our Throwaway Culture?

Jonathan Chapman, a senior lecturer at the University of Brighton, UK, is one of a new breed of 'sustainable designers'. Like many of us, they are concerned about the huge waste associated with Western consumer culture and the damage this does to the environment. Some, like Chapman, aim to create objects we will want to keep rather than discard. Others are working to create more efficient or durable consumer goods, or goods designed with recycling in mind. The waste entailed in our fleeting relationships with consumer durables is colossal.

Domestic power tools, such as electric drills, are a typical example of such waste. However much DIY the purchaser plans to do, the truth is that these things are thrown away having been used, on average, for just ten minutes. Most will serve 'conscience time', gathering dust on a shelf in the garage; people are reluctant to admit that they have wasted their money. However, the end is inevitable: thousands of years in land-fill waste sites. In its design, manufacture, packaging, transportation and disposal, a power tool consumes many times its own weight of resources, all for a shorter active lifespan than that of the average small insect.

To understand why we have become so wasteful, we should look to the underlying motivation of consumers. "People own things to give expression to who they are, and to show what group of people they feel they belong to," Chapman says. In a world of mass production, however, that symbolism has lost much of its potency. For most of human history, people had an intimate relationship with objects they used or treasured. Often they made the objects themselves, or family members passed them on. For more specialised objects, people relied on expert manufacturers living close by, whom they probably knew personally. Chapman points out that all these factors gave objects a history — a narrative — and an emotional connection that today's mass-produced goods cannot possibly match. Without these personal connections, consumerist culture idolizes novelty instead. People know that they cannot buy happiness, but the chance to remake themselves with glossy, box-fresh products seems irresistible. When the novelty fades, they simply renew the excitement by buying more.

Chapman's solution is what he calls 'emotionally durable design'. He says the challenge for designers is to create things we want to keep. This may sound like a tall order but it can be surprisingly straightforward. A favorite pair of old jeans, for example, just do not have the right feel until they have been worn and washed a hundred times. It is as if

they are sharing the wearer's life story. The look can be faked, but it is simply not the same. Walter Stahel, visiting professor at the University of Surrey, UK, calls this 'the teddy bear factor'. No matter how ragged and worn a favorite teddy becomes, we don't rush out and buy another one. As adults, our teddy bear connects us to our childhood and this protects it from obsolescence. Stahel argues that this is what sustainable design needs to do with more products.

The information age was supposed to lighten our economies and reduce our impact on the environment, but, in fact, the reverse seems to be happening. We have simply added information technology to the industrial era and speeded up the developed world's metabolism. The cure is hardly rocket science: minimise waste, stop moving things around so much and use people more. So what will post-throwaway consumerism look like? It might be as simple as installing energy-saving light bulbs, more efficient washing machines or choosing locally produced groceries with less packaging. In general, we will spend less on goods and more on services. Instead of buying a second car, for example, we might buy into a car-sharing network. Rather than following our current wasteful practices, we will buy less and rent a lot more; why own things such as tools that you use infrequently, especially things are likely to be updated all the time?

Consumer durables will increasingly be sold with plans for their disposal. Electronic goods such as mobile phones will be designed to be recyclable, with the extra cost added into the retail price. Following Chapman's notion of emotionally durable design, there will be a move away from mass production and towards tailor-made articles and products designed and manufactured with greater craftsmanship, products which will be repaired rather than replaced, in the same way as was done in our grandparents' time. Companies will replace profit from bulk sales by servicing and repairing products chosen because we want them to last.

Chapman acknowledges that it will be a challenge to persuade people to buy fewer goods, and ones that they intend to keep. At the moment, price competition between retailers makes it cheaper for consumers to replace rather than repair.

Products designed to be durable and emotionally satisfying are likely to be more expensive, so how will we be persuaded to choose sustainability? Tim Cooper, from Sheffield Hallam University in the UK, points out that many people are already happy to pay a premium for quality, and that they also tend to value and care more for expensive goods. Chapman is also positive: "People are ready to keep things for longer," he says, "The problem is that a lot of industries don't know how to do that." Chapman believes

that sustainable design is here to stay. "The days when large corporations were in a position to choose whether to jump on the sustainability band-wagon or not are coming to an end," he says. Whether this is also the beginning of the end of the throwaway society remains to be

Questions 27-31

Choose the correct letter, A, B, C or D. Write the correct letter in boxes 27-31 on your answer sheet.

- 27 In the second paragraph, the expression 'conscience time' refers to the fact that the owners
- A. wish they had not bought the power tool.
 - B. want to make sure the tool is stored safely.
 - C. feel that the tool will increase in value in the future.
 - D. would feel guilty if they threw the tool away immediately.
- 28 Jonathan Chapman uses the word 'narrative' in the third paragraph to refer to the fact that the owner
- A. told a story about how the item was bought.
 - B. was aware of how the item had come into being.
 - C. felt that the item became more useful over time.
 - D. was told that the item had been used for a long time.
- 29 In the third paragraph, the writer suggests that mass-produced goods are
- A. inferior in quality.
 - B. less likely to be kept for a long time.
 - C. attractive because of their lower prices.
 - D. less tempting than goods which are traditionally produced.
- 30 Lack of personal connection to goods is described as producing
- A. a belief that older goods are superior.
 - B. an attraction to well-designed packaging.
 - C. a desire to demonstrate status through belongings.
 - D. a desire to purchase a constant stream of new items.
- 31 Jeans and teddy bears are given as examples of goods which
- A. have been very well designed.
 - B. take a long time to show wear.
 - C. are valued more as they grow older.
 - D. are used by the majority of the population.

Questions 32-35

Do the following statements agree with the views of the writer in reading Passage 3?

In boxes 32-35 on your answer sheet, write

TRUE if the statement agrees with the views of the writer

FALSE if the statement contradicts the views of the writer

NOT GIVEN if it is impossible to say what the writer thinks about this

32 People often buy goods that they make little use of.

33 Understanding the reasons for buying goods will help to explain why waste occurs.

34 People already rent more goods than they buy.

35 Companies will charge less to repair goods in the future.

Questions 36-40

Complete the summary using the list of words, A-I, below. Write the correct letter, A-I, in boxes 36-40 on your answer sheet.

A cure for our wasteful habits

The writer believes that the recipe for reducing our impact on the environment is a simple one. He states that we should use less energy for things such as lighting or 36....., and buy 37..... that will not need to be moved across long distances.

Some expensive items such as 38..... could be shared, and others which may be less expensive but which are not needed often, such as 39, could be rented instead of being purchased. He believes that manufacturers will need to design high-technology items such as 40.....so that they can be recycled more easily.

- | | | | | |
|------------------|-------------|----------|----------------|--------------|
| A. mobile phones | B. clothing | C. tools | D. laundry | E. computers |
| F. food | G. heating | H. cars | I. teddy bears | |

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Exam reading test 5**Reading passage 1 – Spend 20 minutes****Alfred Nobel**

Since 1901, the Nobel Prize has been honoring men and women from all corners of the globe for outstanding achievements in physics, chemistry, medicine, literature, and for work in peace. The foundations for the prize were laid in 1895 when Alfred Nobel wrote his last will, leaving much of his wealth to the establishment of the Nobel Prize.

Alfred Nobel was born in Stockholm on October 21, 1833. His father Immanuel Nobel was an engineer and inventor who built bridges and buildings in Stockholm. In connection with his construction work Immanuel Nobel also experimented with different techniques for blasting rocks. Successful in his industrial and business ventures, Immanuel Nobel was able, in 1842, to bring his family to St. Petersburg. There, his sons were given a first class education by private teachers. The training included natural sciences, languages and literature. By the age of 17 Alfred Nobel was fluent in Swedish, Russian, French, English and German. His primary interests were in English literature and poetry as well as in chemistry and physics. Alfred's father, who wanted his sons to join his enterprise as engineers, disliked Alfred's interest in poetry and found his son rather introverted.

In order to widen Alfred's horizons his father sent him abroad for further training in chemical engineering. During a two year period Alfred Nobel visited Sweden, Germany, France and the United States. In Paris, the city he came to like best, he worked in the private laboratory of Professor T. J. Pclouze, a famous chemist. There he met the young Italian chemist Ascanio Sobrero who, three years earlier, had invented nitroglycerine, a highly explosive liquid. But it was considered too dangerous to be of any practical use. Although its explosive power greatly exceeded that of gunpowder, the liquid would explode in a very unpredictable manner if subjected to heat and pressure. Alfred Nobel became very interested in nitroglycerine and how it could be put to practical use in construction work. He also realized that the safety problems had to be solved and a method had to be developed for the controlled detonation of nitroglycerine.

After his return to Sweden in 1863, Alfred Nobel concentrated on developing nitroglycerine as an explosive. Several explosions, including one (1864) in which his brother Emil and several other persons were killed, convinced the authorities that nitroglycerine production was exceedingly dangerous. They forbade further experimentation with nitroglycerine within the Stockholm city limits and Alfred

Nobel had to move his experimentation to a barge anchored on Lake Malaren. Alfred was not discouraged and in 1864 he was able to start mass production of nitroglycerine. To make the handling of nitroglycerine safer Alfred Nobel experimented with different additives. He soon found that mixing nitroglycerine with kieselguhr would turn the liquid into a paste which could be shaped into rods of a size and form suitable for insertion into drilling holes. In 1867 he patented this material under the name of dynamite. To be able to detonate the dynamite rods he also invented a detonator (blasting cap) which could be ignited by lighting a fuse. These inventions were made at the same time as the pneumatic drill came into general use. Together these inventions drastically reduced the cost of blasting rock, drilling tunnels, building canals and many other forms of construction work.

The market for dynamite and detonating caps grew very rapidly and Alfred Nobel also proved himself to be a very skillful entrepreneur and businessman. Over the years he founded factories and laboratories in some 90 different places in more than 20 countries. Although he lived in Paris much of his life he was constantly traveling. When he was not traveling or engaging in business activities Nobel himself worked intensively in his various laboratories, first in Stockholm and later in other places. He focused on the development of explosives technology as well as other chemical inventions including such materials as synthetic rubber and leather, artificial silk, etc. By the time of his death in 1896 he had 355 patents.

Intensive work and travel did not leave much time for a private life. At the age of 43 he was feeling like an old man. At this time he advertised in a newspaper "wealthy, highly-educated elderly gentleman seeks lady of mature age, versed in languages, as secretary and supervisor of household." The most qualified applicant turned out to be an Austrian woman, Countess Bertha Kinsky. After working a very short time for Nobel she decided to return to Austria to marry Count Arthur von Suttner. In spite of this Alfred Nobel and Bertha von Suttner remained friends and kept writing letters to each other for decades. Over the years Bertha von Suttner became increasingly critical of the arms race. She wrote a famous book, *Lay Down Your Arms* and became a prominent figure in the peace movement. No doubt this influenced Alfred Nobel when he wrote his final will which was to include a Prize for persons or organizations who promoted peace. Several years after the death of Alfred Nobel, the Norwegian Storting (Parliament) decided to award the 1905 Nobel Peace Prize to Bertha von Suttner.

Alfred Nobel died in San Remo, Italy, on December 10, 1896. When his will was opened it came as a surprise that his fortune was to be used for Prizes in Physics, Chemistry, Physiology or Medicine, Literature and Peace. The executors of his will

were two young engineers, Ragnar Sohlman and Rudolf Lilljequist. They set about forming the Nobel Foundation as an organization to take care of the financial assets left by Nobel for this purpose and to coordinate the work of the Prize-Awarding Institutions. This was not without its difficulties since the will was contested by relatives and questioned by authorities in various countries.

Alfred Nobel's greatness lay in his ability to combine the penetrating mind of the scientist and inventor with the forward-looking dynamism of the industrialist. Nobel was very interested in social and peace-related issues and held what were considered radical views in his era. He had a great interest in literature and wrote his own poetry and dramatic works. The Nobel Prizes became an extension and a fulfillment of his lifetime interests.

Questions 1-6

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 The first Nobel Prize was awarded in 1895.
- 2 Nobel's father wanted his son to have better education than what he had had.
- 3 Nobel was an unsuccessful businessman.
- 4 Bertha von Suttner was selected by Nobel himself for the first peace prize.
- 5 The Nobel Foundation was established after the death of Nobel
- 6 Nobel's social involvement was uncommon in the 1800's.

Questions 7-13

Complete the notes below using **NO MORE THAN TWO WORDS** from the passage. Write your answers in boxes 7-13 on your answer sheet.

Education:

Having accumulated a great fortune in his business, Nobel's father determined to give his son the best education and sent him abroad to be trained in 7..... during Nobel's study in Paris, he worked in a private laboratory, where he came in contact with a young engineer 8.....and his invention nitroglycerine, a more powerful explosive than 9.....

Benefits in construction works:

Nobel became really interested in this new explosive and experimented on it. But nitroglycerine was too dangerous and was banned for experiments within the city of 10..... So Nobel had to move his experiments to a lake. To make nitroglycerine easily usable, Nobel invented dynamite along with 11.....while in the meantime 12.....became popular, all of which dramatically lowered the 13.....of construction works.

READING PASSAGE 2*Spend about 20 minutes***Questions 14-20**

Reading passage 2 has seven paragraphs, A-G. Choose the correct heading for each paragraph from the list of headings below. Write the correct number, i-x, in boxes 14-20 on your answer sheet.

List of headings

- i. The best moment to migrate
- ii. The unexplained rejection of closer feeding ground
- iii. The influence of weather on the migration route
- iv. Physical characteristics that allow birds to migrate
- v. The main reason why birds migrate
- vi. The best wintering grounds for birds
- vii. Research findings on how birds migrate
- viii. Successful migration despite trouble of wind
- ix. Contrast between long-distance migration and short-distance migration
- x. Mysterious migration despite lack of teaching

14 Paragraph A**15** Paragraph B**16** Paragraph C**17** Paragraph D**18** Paragraph E**19** Paragraph F**20** Paragraph G**BIRD MIGRATION**

- A. Birds have many unique design features that enable them to perform such amazing feats of endurance. They are equipped with lightweight, hollow bones, intricately designed feathers providing both lift and thrust for rapid flight, navigation systems superior to any that man has developed, and an ingenious heat conserving design that, among other things, concentrates all blood circulation beneath layers of warm, waterproof plumage, leaving them fit to face life in the harshest of climates. Their respiratory systems have to perform efficiently during sustained flights at altitude, so they have a system of extracting oxygen from their lungs that far exceeds that of any other animal. During the later stages of the summer breeding season, when food is plentiful, their bodies are able to accumulate considerable layers of fat, in order to provide sufficient energy for their long migratory flights.
- B. The fundamental reason that birds migrate is to find adequate food during the winter months when it is in short supply. This particularly applies to birds that breed in the temperate and Arctic regions of the Northern Hemisphere, where

food is abundant during the short growing season. Many species can tolerate cold temperatures if food is plentiful, but when food is not available they must migrate. However, intriguing questions remain.

- C. One puzzling fact is that many birds journey much further than would be necessary just to find food and good weather. Nobody knows, for instance, why British swallows, which could presumably survive equally well if they spent the winter in equatorial Africa, instead fly several thousands of miles further to their preferred winter home in South Africa's Cape Province. Another mystery involves the huge migrations performed by arctic terns and mudflat-feeding shorebirds that breed close to Polar Regions. In general, the further north a migrant species breeds, the further south it spends the winter. For arctic terns this necessitates an annual round trip of 25,000 miles. Yet, en route to their final destination in far-flung southern latitudes, all these individuals overfly other areas of seemingly suitable habitat spanning two hemispheres. While we may not fully understand birds' reasons for going to particular places, we can marvel at their feats.
- D. One of the greatest mysteries is how young birds know how to find the traditional wintering areas without parental guidance. Very few adults migrate with juveniles in tow, and youngsters may even have little or no inkling of their parents' appearance. A familiar example is that of the cuckoo, which lays its eggs in another species' nest and never encounters its young again. It is mind boggling to consider that, once raised by its host species, the young cuckoo makes its own way to ancestral wintering grounds in the tropics before returning single-handedly to northern Europe the next season to seek out a mate among its own kind. The obvious implication is that it inherits from its parents an inbuilt route map and direction-finding capability, as well as a mental image of what another cuckoo looks like. Yet nobody has the slightest idea as to how this is possible.
- E. Mounting evidence has confirmed that birds use the positions of the sun and stars to obtain compass directions. They seem also to be able to detect the earth's magnetic field, probably due to having minute crystals of magnetite in the region of their brains. However, true navigation also requires an awareness of position and time, especially when lost. Experiments have shown that after being taken thousands of miles over an unfamiliar landmass, birds are still capable of returning rapidly to nest sites. Such phenomenal powers are the product of computing a number of sophisticated cues, including an inborn map of the night sky and the pull of the earth's magnetic field. How the birds use their 'instruments' remains unknown, but one thing is clear: they see the world with a superior sensory perception to ours. Most small birds migrate at night and take their direction from the position of the setting sun. However, as well as seeing the sun go down, they also seem to see the plane of polarized light caused by it,

which calibrates their compass. Traveling at night provides other benefits. Daytime predators are avoided and the danger of dehydration due to flying for long periods in warm, sunlit skies is reduced. Furthermore, at night the air is generally cool and less turbulent and so conducive to sustained, stable flight.

F. Nevertheless, all journeys involve considerable risk, and part of the skill in arriving safely is setting off at the right time. This means accurate weather forecasting, and utilizing favorable winds. Birds are adept at both, and, in laboratory tests, some have been shown to detect the minute difference in barometric pressure between the floor and ceiling of a room. Often birds react to weather changes before there is any visible sign of them. Lapwings, which feed on grassland, flee west from the Netherlands to the British Isles, France and Spain at the onset of a cold snap. When the ground surface freezes the birds could starve. Yet they return to Holland ahead of a thaw, their arrival linked to a pressure change presaging an improvement in the weather.

G. In one instance a Welsh Manx shearwater carried to America and released was back in its burrow on Skokholm Island, off the Pembrokeshire coast, one day before a letter announcing its release! Conversely, each autumn a small number of North American birds are blown across the Atlantic by fast-moving westerly tail winds. Not only do they arrive safely in Europe, but, based on ringing evidence, some make it back to North America the following spring, after probably spending the winter with European migrants in sunny African climes.

Questions 21-22

Choose **TWO** letters, A-E. Write the correct letters in your answer sheet.

Which **TWO** of the following statements are true of bird migration?

- A. Birds often fly further than they need to.
- B. Birds traveling in family groups are safe.
- C. Birds flying at night need less water.
- D. Birds have much sharper eye-sight than humans.
- E. Only shorebirds are resistant to strong winds.

Question 23-26

Complete the sentences below using **NO MORE THAN ONE WORD OR NUMBER** from the passage. Write your answers in your answer sheet.

23 It is a great mystery that young birds like cuckoos can find their wintering grounds without

24 Evidence shows birds can tell directions like a.....by observing the sun and the stars.

25 One advantage for birds flying at night is that they can avoid contact with

26 Laboratory tests show that birds can detect weather without _____ signs.

READING PASSAGE 3

Spend about 20 minutes

The Ingenuity Gap

Ingenuity, as I define it here, consists not only of ideas for new technologies like computers or drought-resistant crops but, more fundamentally, of ideas for better institutions and social arrangements, like efficient markets and competent governments.

How much and what kinds of ingenuity a society requires depends on a range of factors, including the society's goals and the circumstances within which it must achieve those goals—whether it has a young population or an aging one, an abundance of natural resources or a scarcity of them, an easy climate or a punishing one, whatever the case may be.

How much and what kinds of ingenuity a society supplies also depends on many factors, such as the nature of human inventiveness and understanding, the rewards an economy gives to the producers of useful knowledge, and the strength of political opposition to social and institutional reforms.

A good supply of the right kind of ingenuity is essential, but it isn't, of course, enough by itself. We know that the creation of wealth, for example, depends not only on an adequate supply of useful ideas but also on the availability of other, more conventional factors of production, like capital and labor. Similarly, prosperity, stability and justice usually depend on the resolution, or at least the containment, of major political struggles over wealth and power. Yet within our economies ingenuity often supplants labor, and growth in the stock of physical plant is usually accompanied by growth in the stock of ingenuity. And in our political systems, we need great ingenuity to set up institutions that successfully manage struggles over wealth and power. Clearly, our economic and political processes are intimately entangled with the production and use of ingenuity.

The past century's countless incremental changes in our societies around the planet, in our technologies and our interactions with our surrounding natural environments, have accumulated to create a qualitatively new world. Because these changes have accumulated slowly, it's often hard for us to recognize how profound and sweeping they've been. They include far larger and denser populations; much higher per capita consumption of natural resources; and far better and more widely available technologies for the movement of people, materials, and especially information.

In combination, these changes have sharply increased the density, intensity, and pace of our interactions with each other; they have greatly increased the burden we place on our natural environment; and they have helped shift power from national and international institutions to individuals and subgroups, such as political special interests and ethnic factions.

As a result, people in all walks of life—from our political and business leaders to all of us in our day-to-day—must cope with much more complex, urgent, and often unpredictable circumstances. The management of our relationship with this new world requires immense and ever-increasing amounts of social and technical ingenuity. As we strive to maintain or increase our prosperity and improve the quality of our lives, we must make far more sophisticated decisions, and in less time, than ever before.

When we enhance the performance of any system, from our cars to the planet's network of financial institutions, we tend to make it more complex. Many of the natural systems critical to our well-being, like the global climate and the oceans, are extraordinarily complex to begin with. We often can't predict or manage the behavior of complex systems with much precision, because they are often very sensitive to the smallest of changes and perturbations, and their behavior can flip from one mode to another suddenly and dramatically. In general, as the human-made and natural systems we depend upon become more complex, and as our demands on them increase, the institutions and technologies we use to manage them must become more complex too, which further boosts our need for ingenuity.

The good news, though, is that the last century's stunning changes in our societies and technologies have not just increased our need for ingenuity; they have also produced a huge increase in its supply. The growth and urbanization of human populations have combined with astonishing new communication and transportation technologies to expand interactions among people and produce larger, more integrated, and more efficient markets. These changes have, in turn, vastly accelerated the generation and delivery of useful ideas.

But—and this is the critical "but"—we should not jump to the conclusion that the supply of ingenuity always increases in lockstep with our ingenuity requirement: while it's true that necessity is often the mother of invention, we can't always rely on the right kind of ingenuity appearing when and where we need it. In many cases, the complexity and speed of operation of today's vital economic, social, and ecological systems exceed the human brain's grasp. Very few of us have more than a rudimentary understanding of how these systems work. They remain fraught with

countless "unknown unknowns," which makes it hard to supply the ingenuity we need to solve problems associated with these systems.

In this book, I explore a wide range of other factors that will limit our ability to supply the ingenuity required in the coming century. For example, many people believe that new communication technologies strengthen democracy and will make it easier to find solutions to our societies' collective problems, but the story is less clear than it seems. The crush of information in our everyday lives is shortening our attention span, limiting the time we have to reflect on critical matters of public policy, and making policy arguments more superficial.

Modern markets and science are an important part of the story of how we supply ingenuity. Markets are critically important, because they give entrepreneurs an incentive to produce knowledge. As for science, although it seems to face no theoretical limits, at least in the foreseeable future, practical constraints often slow its progress. The cost of scientific research tends to increase as it delves deeper into nature. And science's rate of advance depends on the characteristic of the natural phenomena it investigates, simply because some phenomena are intrinsically harder to understand than others, so the production of useful new knowledge in these areas can be very slow. Consequently, there is often a critical time lag between the recognition between a problem and the delivery of sufficient ingenuity, in the form of technologies, to solve that problem. Progress in the social sciences is especially slow, for reasons we don't yet understand; but we desperately need better social scientific knowledge to build the sophisticated institutions today's world demands.

Questions 27-30

Complete each sentence with the appropriate answer, A, B, C, or D. Write the correct answer in boxes 27-30 on your answer sheet.

- 27 The definition of ingenuity
 - 28 The requirement for ingenuity
 - 29 The creation of social wealth
 - 30 The stability of society
- A depends on many factors including climate.
B depends on the management and solution of disputes.
C is not only of technological advance, but more of institutional renovation.
D also depends on the availability of some traditional resources.

Questions 31-33

Choose the correct letter, A, B, C or D. Write your answers in boxes 31-33 on your answer sheet.

31. What does the author say about the incremental change of the last 100 years?
 - A It has become a hot scholastic discussion among environmentalists.
 - B Its significance is often not noticed.
 - C It has reshaped the natural environments we live in.
 - D It benefited a much larger population than ever.
32. The combination of changes has made life:
 - A easier
 - B faster
 - C slower
 - D less sophisticated
33. What does the author say about the natural systems?
 - A New technologies are being developed to predict change with precision.
 - B Natural systems are often more sophisticated than other systems.
 - C Minor alterations may cause natural systems to change dramatically.
 - D Technological developments have rendered human being more independent of natural systems.

Questions 34-40

Do the following statements agree with the information given in Reading Passage 3?

In boxes 34-40 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

34. The demand for ingenuity has been growing during the past 100 years.
35. The ingenuity we have may be inappropriate for solving problems at hand.
36. There are very few who can understand the complex systems of the present world.
37. More information will help us to make better decisions.
38. The next generation will blame the current government for their conduct.
39. Science tends to develop faster in certain areas than others.
40. Social science develops especially slowly because it is not as important as natural science.

Exam reading test 6**Reading passage 1 – Spend 20 minutes****Man or Machine**

MIT's humanoid robots showcase both human creativity and contemporary pessimism.

Humanoid robots were once the stuff of political and science fiction. Today, scientists working in Japan and the USA have been turning fiction into a physical reality.

- A. During July 2003, the Museum of Science in Cambridge, Massachusetts exhibited what Honda calls 'the world's most advanced humanoid robot', ASIMO (the Advanced Step in Innovative Mobility). Honda's brainchild is on tour in North America and delighting audiences wherever it goes. After 17 years in the making, ASIMO stands at four feet tall, weighs around 115 pounds and bob like a child in an astronaut's suit. Though it is difficult to see ASIMO's face at a distance, on closer inspection it has a smile and two large 'eyes' that conceal cameras. The robot cannot work autonomously — its actions are 'remote controlled' by scientists through the computer in its backpack. Yet watching ASIMO perform at a show in Massachusetts it seemed uncannily human. The audience cheered as ASIMO walked forwards and backwards, side to side and up and downstairs. It can even dance to the Hawaiian Hula.
- B. While the Japanese have made huge strides in solving some of the engineering problems of human kinetics and bipedal movements, for the past 10 years scientists at MIT's former Artificial Intelligence (AI) lab (recently renamed the Computer Science and Artificial Intelligence Laboratory, CSAIL) have been making robots that can behave like humans and interact with humans. One of MIT's robots, Kismet, is an anthropomorphic head and has two eyes (complete with eyelids), ears, a mouth, and eyebrows. It has several facial expressions, including happy, sad, frightened and disgusted. Human interlocutors are able to read some of the robot's facial expressions, and often change their behaviour towards the machine as a result - for example, playing with it when it appears 'sad'. Kismet is now in MIT's museum, but the ideas developed here continue to be explored in new robots.
- C. Cog (short for Cognition) is another pioneering project from MIT's former AI lab. Cog has a head, eyes, two arms, hands and a torso — and its proportions were originally measured from the body of a researcher in the lab. The work on Cog has been used to test theories of embodiment and developmental robotics, particularly getting a robot to develop intelligence by responding to its environment via sensors, and to learn through these types of interactions. This approach to AI was thought up and developed by a team of students and researchers led by the head of MIT's former AI lab, Rodney Brooks (now head of CSAIL), and represented a completely new development.
- D. This work at MIT is getting furthest down the road to creating human-like and interactive robots. Some scientists argue that ASIMO is a great engineering feat but not an intelligent machine — because it is unable to interact autonomously with unpredictabilities in its

environment in meaningful ways, and learn from experience. Robots like Cog and Kismet and new robots at MIT's CSAIL and media lab, however, are beginning to do this.

E. These are exciting developments. Creating a machine that can walk, make gestures and learn from its environment is an amazing achievement. And watch this space: these achievements are likely rapidly to be improved upon. Humanoid robots could have a plethora of uses in society, helping to free people from everyday tasks. In Japan, for example, there is an aim to create robots that can do the tasks similar to an average human, and also act in more sophisticated situations as firefighters, astronauts or medical assistants to the elderly in the workplace and in homes — partly in order to counterbalance the effects of an ageing population.

F. So in addition to these potentially creative plans there lies a certain dehumanisation. The idea that companions can be replaced with machines, for example, suggests a mechanical and degraded notion of human relationships. On one hand, these developments express human creativity — our ability to invent, experiment, and to extend our control over the world. On the other hand, the aim to create a robot like a human being is spurred on by dehumanised ideas — by the sense that human companionship can be substituted by machines; that humans lose their humanity when they interact with technology; or that we are little more than surface and ritual behaviours, that can be simulated with metal and electrical circuits.

G. The tension between the dehumanised and creative aspects of robots has long been explored in culture. In Karel Capek's *Rossum's Universal Robots*, a 1921 play in which the term 'robot' was first coined, although Capek's robots had human-like appearance and behaviour, the dramatist never thought these robots were human. For Capek, being human was about much more than appearing to be human. In part, it was about challenging a dehumanising system, and struggling to become recognised and given the dignity of more than a machine. A similar spirit would guide us well through twenty-first century experiments in robotics.

Questions 1-7

Reading Passage 1 has seven paragraphs, A-G. Which paragraph contains the following information? Write the correct letter, A-G, in boxes 1-7 on your answer sheet.

1. The different uses of robots in society
2. How robot is used in the artistic work
3. A robot that was modelled on an adult
4. A comparison between two different types of robots
5. A criticism of the negative effects of humanoid robots on the society
6. A reference to the first use of the word "robot"
7. People feel humanity may be replaced by robots

Questions 8-13

Complete the summary below using **NO MORE THAN TWO WORDS** from the passage.
Write your answers in boxes 8-13 on your answer sheet.

It took Honda 8.....years to make ASIMO, a human-looking robot that attracted broad interests from audiences. Unlike ASIMO, which has to be controlled through a computer installed in the 9....., MIT's scientists aimed to make a robot that can imitate human behavior and 10.....with humans. One of such particular inventions can express its own feelings through 11..... Another innovative project is a robot called 12....., which is expected to learn from its environment to gain some 13.....

READING PASSAGE 2

You should spend about 20 minutes on **Questions 14-26**

California's Age of Megafires

Drought, housing expansion, and oversupply of tinder make for bigger, hotter fires.

There's a reason fire squads now battling more than a dozen blazes in southern California are having such difficulty containing the flames, despite better preparedness than ever and decades of experience fighting fires fanned by the notorious Santa Ana winds. The wildfires themselves, experts say, generally are hotter, move faster, and spread more erratically than in the past.

Megafires, also called "siege fires," are the increasingly frequent blazes that burn 500,000 acres or more — 10 times the size of the average forest fire of 20 years ago. One of the current wildfires is the sixth biggest in California ever, in terms of acreage burned, according to state figures and news reports.

The short-term explanation is that the region, which usually has dry summers, has had nine inches less rainfall than normal this year. Longer term, climate change across the West is leading to hotter days on average and longer fire seasons. The trend to more superhot fires, experts say, has been driven by a century-long policy of the US Forest Service to stop wildfires as quickly as possible. The unintentional consequence was to halt the natural eradication of underbrush, now the primary fuel for megafires.

Three other factors contribute to the trend, they add. First is climate change marked by a 1-degree F rise in average yearly temperature across the West. Second is a fire season that on average is 78 days longer than in the late 1980s. Third is increased building of homes and other structures in wooded areas. "We are increasingly building our homes ... in fire-prone ecosystems," says Dominik Kulakowski, adjunct professor of biology at Clark University Graduate School of Geography in Worcester, Mass. Doing that "in many

of the forests of the Western US ... is like building homes on the side of an active volcano."

In California, where population growth has averaged more than 600,000 a year for at least a decade, housing has pushed into such areas. "What once was open space is now residential homes providing fuel to make fires burn with greater intensity," says Terry McHale of the California Department of Forestry firefighters union. "With so much dryness, so many communities to catch fire, so many fronts to fight, it becomes an almost incredible job."

That said, many experts give California high marks for making progress on preparedness since 2003, when the largest fires in state history scorched 750,000 acres, burned 3,640 homes, and killed 22 people. Stung then by criticism of bungling that allowed fires to spread when they might have been contained, personnel are meeting the peculiar challenges of neighborhood and canyon-hopping fires better than in recent years, observers say.

State promises to provide newer engines, planes, and helicopters have been fulfilled. Firefighters unions that then complained of dilapidated equipment, old fire engines, and insufficient blueprints for fire safety are now praising the state's commitment, noting that funding for firefighting has increased despite huge cuts in many other programs. We are pleased that the Schwarzenegger administration has been very proactive in its support of us and come through with budgetary support of the infrastructure needs we have long sought," says Mr. McHale with the firefighters union.

Besides providing money to upgrade the fire engines that must traverse the mammoth state and wind along serpentine canyon roads, the state has invested in better command-and-control facilities as well as the strategies to run them. "In the fire sieges of earlier years, we found out that we had the willingness of mutual-aid help from other jurisdictions and states, but we were not able to communicate adequately with them," says Kim Zagaris, chief of the state's Office of Emergency Services, fire and rescue branch. After a 2004 blue-ribbon commission examined and revamped those procedures, the statewide response "has become far more professional and responsive," he says.

Besides ordering the California National Guard on Monday to make 1,500 guardsmen available for firefighting efforts, Gov. Arnold Schwarzenegger asked the Pentagon to send all available Modular Airborne Fighting Systems to the area. The military Lockheed

C-130 cargo/utility aircraft carry a pressurized 3,000-gallon tank that can eject fire retardant or water in fewer than five seconds through two tubes at the rear of the plane. This load can cover an area 1/4-mile long and 60 feet wide to create a fire barrier. Governor Schwarzenegger also directed 2,300 inmate firefighters and 170 custody staff from the California Department of Corrections and Rehabilitation to work hand in hand with state and local firefighters.

Residents and government officials alike are noting the improvements with gratitude, even amid the loss of homes, churches, businesses, and farms. Despite such losses, there is a sense that the speed, dedication, and coordination of firefighters from several states and jurisdictions are resulting in greater efficiency than in past "siege fire" situations.

"I am extraordinarily impressed by the improvements we have witnessed between the last big fire and this," says Ross Simmons, a San Diego-based lawyer who had to evacuate both his home and business on Monday, taking up residence at a Hampton Inn 30 miles south of his home in Rancho Bernardo. After fires consumed 172,000 acres there in 2003, the San Diego region turned communitywide soul-searching into improved building codes, evacuation procedures, and procurement of new technology. Mr. Simmons and neighbors began receiving automated phone calls at 3:30 a.m. Monday morning telling them to evacuate. "Notwithstanding all the damage that will be caused by this, we will not come close to the loss of life because of what we have ... put in place since then," he says.

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.

Fighting Californian wildfires is still not an easy task because the fires the firefighters now face 14.....in more unpredictable manner in addition to the raging heat and faster speed than ever. Megafires, as they are called, are often 15.....bigger than average forest fire. The reasons for this include 16.....below the average and the extended 17.....due to climate change. And according to experts, the government policy has also contributed to this by accidentally making the underbrush the 18 for megafires.

Questions 19-23

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

TRUE	<i>if the statement agrees with the information</i>
FALSE	<i>if the statement contradicts the information</i>
NOT GIVEN	<i>if there is no information on this</i>

- 19 Open space has been disappearing in the past 10 years.
- 20 The equipment firefighters use today is better than before.
- 21 The state recruited new firefighters.
- 22 In the early years, no other states wished to help California to fight the fire.
- 23 The 2004 blue-ribbon commission did not make any achievements.

Questions 24-26

Choose the correct letter. A, B, C or D. Write your answers in boxes 24-26 on your answer sheet.

24. Why does the author mention Governor Schwarzenegger, California National Guard, Pentagon and the California Department of Corrections and Rehabilitation?

- A. To show the active involvement of the Schwarzenegger's administration
- B. To illustrate the cross-state and cross-jurisdiction cooperation in fire-fighting
- C. To demonstrate how the military is more effective at fighting fire than others
- D. To give an example of how resources should be mobilised to fight fires

25. How do the locals feel about the improvements made by the state government?

- A. glad
- B. unsatisfied
- C. unconcerned
- D. bitter

26. According to Ross Simmons, which of the following statements is true?

- A. It's harder to evacuate people in daytime.
- B. People refuse to improve their house in fire resisting ability.
- C. People can hardly believe the magnitude of damage today.
- D. People are less likely to die in fires now

READING PASSAGE 3 Spend about 20 minutes**The Rainmaker**

Sometimes ideas just pop up out of the blue. Or in Charlie Paton's case, out of the rain. "I was in a bus in Morocco travelling through the desert," he remembers. "It had been raining and the bus was full of hot, wet people. The windows steamed up and I went to sleep with a towel against the glass. When I woke, the thing was soaking wet. I had to wring it out. And it set me thinking. Why was it so wet?"

The answer, of course, was condensation. Back home in London, a physicist friend, Philip Davies, explained that the glass, chilled by the rain outside, had cooled the hot humid air inside the bus below its dew point, causing droplets of water to form on the inside of the window. Intrigued, Paton — a lighting engineer by profession — started rigging up his own equipment. "I made my own solar stills. It occurred to me that you might be able to produce water in this way in the desert, simply by cooling the air. I wondered whether you could make enough to irrigate fields and grow crops."

Today, a decade on, his dream has taken shape as a giant greenhouse on a desert island off Abu Dhabi in the Persian Gulf — the first commercially viable version of his "seawater greenhouse". Local scientists, working with Paton under a licence from his company Light Works, are watering the desert and growing vegetables in what is basically a giant dew-making machine that produces fresh water and cool air from sun and seawater. In awarding Paton first prize in a design competition two years ago, Marco Goldschmied, president of the Royal Institute of British Architects, called it "a truly original idea which has the potential to impact on the lives of millions of people living in coastal water-starved areas around the world".

The design has three main parts (see Graphic). The greenhouse faces into the prevailing wind so that hot, dry desert air blows in through the front wall of perforated cardboard, kept wet and cool by a constant trickle of seawater pumped up from the nearby shoreline. The evaporating seawater cools and moistens the air. Last June, for example, when the temperature outside the Abu Dhabi greenhouse was 46 °C, it was in the low 30s inside. While the air outside was dry, the humidity in the greenhouse was 90 per cent. The cool, moist air allows the plants to grow faster, and because much less water evaporates from the leaves their demand for moisture drops dramatically. Paton's crops thrived on a single litre of water per square metre per day, compared to 8 litres if they were growing outside.

The second feature also cools the air for the plants. Paton has constructed a double-layered roof with an outer layer of clear polythene and an inner, coated layer that reflects infrared light. Visible light can stream through to maximise photosynthesis, while heat from the infrared radiation is trapped in the space between the layers, away from the plants.

At the back of the greenhouse sits the third element, the main water-production unit. Just before entering this unit, the humid air of the greenhouse mixes with the hot, dry air from between the two layers of the roof. This means the air can absorb more moisture as it passes through a second moist cardboard wall. Finally, the hot saturated air hits a condenser. This is a metal surface kept cool by still more seawater - the equivalent of the window on Paton's Moroccan bus. Drops of pure distilled water form on the condenser and flow into a tank for irrigating the crops.

The greenhouse more or less runs itself. Sensors switch everything on when the sun rises and alter flows of air and seawater through the day in response to changes in temperature, humidity and sunlight. On windless days, fans ensure a constant flow of air through the greenhouse. "Once it is tuned to the local environment, you don't need anyone there for it to work," says Paton. "We can run the entire operation off one 13-amp plug, and in future we could make it entirely independent of the grid, powered from a few solar panels."

The net effect is to evaporate seawater into hot desert air, then recondense the moisture as fresh water. At the same time, cool moist air flows through the greenhouse to provide ideal conditions for the crops. The key to the seawater greenhouse's potential is its unique combination of desalination and air conditioning. By tapping the power of the sun it can cool as efficiently as a 500-kilowatt air conditioner while using less than 3 kilowatts of electricity. In practice, it evaporates 3000 litres of seawater a day and turns it into about 800 litres of fresh water —just enough to irrigate the plants. The rest is lost as water vapour.

Critics point out that construction costs of £25 per square metre mean the water is twice as expensive as water from a conventional desalination plant. But the comparison is misleading, says Paton. The natural air conditioning in the greenhouse massively increases the value of that water. Because the plants need only an eighth of the water used by those grown conventionally, the effective cost is only a quarter that of water from a standard desalinator. And costs should plummet when mass production begins, he adds.

Best of all, the greenhouses should be environmentally friendly. "I suppose there might be aesthetic objections to large structures on coastal sites," says Harris, "but it is a clean technology and doesn't produce pollution or even large quantities of hot water."

Questions 27-31

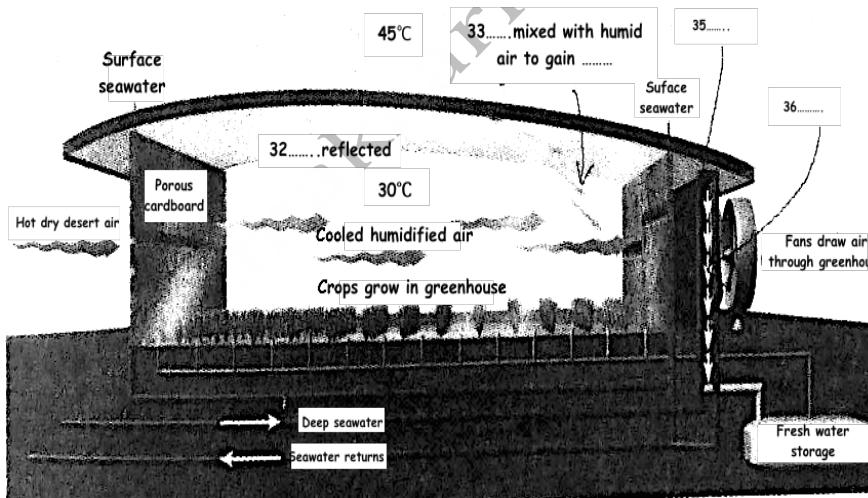
Do the following statements agree with the information given in Reading Passage 3?

- | | |
|------------------|---|
| TRUE | <i>if the statement agrees with the information</i> |
| FALSE | <i>if the statement contradicts the information</i> |
| NOT GIVEN | <i>if there is no information on this</i> |

- 27 Paton came up with the idea of making water in desert by pure accident.
- 28 The bus Paton rode in had poor ventilation because of broken fans.
- 29 Paton woke up from sleep to discover that his towel was wet.
- 30 Paton started his greenhouse project immediately after meeting up with his friend.
- 31 Paton later opened his own business in the Persian Gulf.

Questions 32-36

Complete the diagram below using NO MORE THAN TWO WORDS from the passage. Write your answers in boxes 32-36 on your answer sheet.

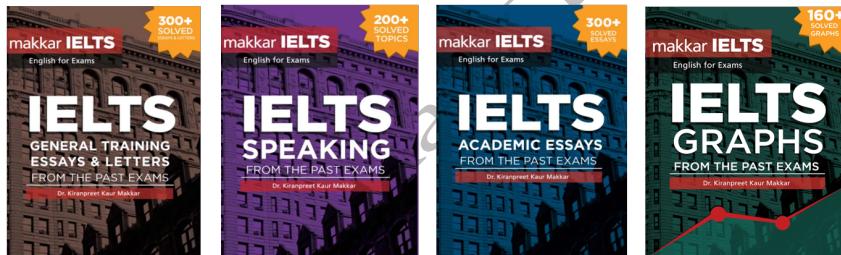


Questions 37-40

Complete the summary below using **NO MORE THAN TWO WORDS** from the passage. Write your answers in boxes 37-40 on your answer sheet.

The greenhouse Paton built is installed with 37.....to keep the air flowing if the wind stands still, and it is expected in the future to rely on electricity provided solely by 38..... Despite the high construction costs compared to desalination plant, the plants grown in Paton's greenhouse need much less water, and if produced in large quantities the 39.....could be reduced remarkably. In addition to all these advantages, it is also 40....., because it is clean and pollution free.

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Exam Reading 7**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, Rwandan 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

FALSE

NOT GIVEN

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 7.....) and clay	Clay can 8..... the poisonous contents in food
1972	Richard Wrangham	Chimpanzee	Leaves with tiny 9on surface	Such leaves can catch and 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 animals 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 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	<i>if the statement agrees with the information</i>
FALSE	<i>if the statement contradicts the information</i>
NOT GIVEN	<i>if there is no information on this</i>

- 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 rubbed 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 11 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 | <i>if the statement agrees with the information</i> |
| NO | <i>if the statement contradicts the information</i> |
| NOT GIVEN | <i>if there is no information on this</i> |

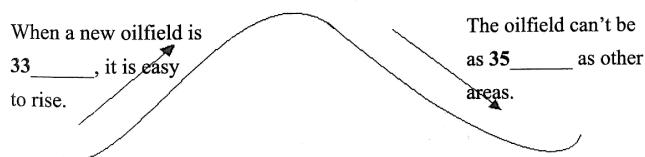
27. Hubbert has a high-profile reputation amongst ODAC members.
28. Oil is likely to last longer than some other energy sources.
29. The majority of geologists believe that oil will start to run out some time this decade.
30. Over 50 percent of the oil we know about is currently being recovered.
31. 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 answer sheet.

Many people believed Hubbert's theory was 32.....when it was originally presented.

The recovery of the oil gets more 34_____ as the reservoir gets older.

**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 oil are possible.

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

READING TEST 1

Passage one

Going bananas

The banana is among the world's oldest crops. Agricultural scientists believe that the first **edible** banana was discovered around 10,000 years ago. It has been at an evolutionary standstill ever since it was first propagated in the jungles of South-East Asia at the end of the last Ice Age. Normally the wild banana, a giant jungle herb card *Musa acuminata*, contains a mass of **hard seeds** that make the fruit virtually inedible. But now-and-then, hunter-gatherers must have discovered rare mutant plants that produced seamless, edible fruits. Geneticists now know that the vast majority of these soft-fruited plants resulted from genetic accidents that gave their cells three copies of each chromosome instead of the usual two. This imbalance prevents seeds and pollens from developing normally, rendering the mutant plants sterile. And that is why some scientists believe the worst – the most popular fruit could be doomed. It lacks the genetic diversity to fight off pests and diseases that are invading the banana plantations of Central America and smallholdings of Africa and Asia alike.

In some ways, the banana today resembles the potato before blight brought famine to Ireland a century and a half ago. But it holds a lesson for other crops too, says **Emile Frison**, top banana at the International Network for the Improvement of Banana and Plantain in Montpellier, France. The state of the banana, **Frison** warns, can teach a broader lesson: the increasing standardization of food crops around the world is threatening their ability to adapt and survive.

The first Stone Age plant breeders cultivated these sterile freaks by replanting cuttings from their stems. And the descendants of those original cuttings are the bananas we still eat today. Each is a virtual clone, almost devoid of genetic diversity. And that uniformity makes it ripe for disease like no other crop on Earth. Traditional varieties of sexually reproducing crops have always had a much broader genetic base, and the genes will recombine in new arrangements in each generation. This gives them much greater flexibility in the evolving response to disease – and far more genetic resources to draw on in the face of an attack. But that advantage is fading fast, as growers increasingly plant the same few high-yielding varieties. Plant breeders work feverishly to maintain resistance in these standardized crops. Should these efforts falter, yields of even the most productive crop could swiftly crash. "When some pests or disease comes along severe epidemics can occur," says **Geoff Hawtin**, director of the Rome-based International Plant Genetic Resources Institute.

Comment [KM1]: Answer 1

Edible means fit to be eaten.
The first answer will be TEN THOUSAND
10,000 would be wrong because the question says no more than three words. The option of numbers is not given

Comment [KM2]: Answer 11: NG

The banana is the oldest known fruit. It is nowhere mentioned whether it was or wasn't the oldest known fruit. It was very old but there may or may not have been crops before it

Comment [KM3]: Answer 2

SOUTH-EAST ASIA is the answer because the word propagated means planted here. Propagated means reproduced

Comment [KM4]: Answer 3

HARD SEEDS is the answer because these make the fruit in-edible, which means these cannot be eaten. Only writing SEEDS would also be correct.

Comment [KM5]: Answer 10

Lessons can be learned from bananas for other crops.

Comment [KM6]: Answer 4 = F

Pest invasion means pests come along and epidemic means affecting a lot of plants
A pest invasion may seriously damage the banana industry

The banana is an excellent case in point. Until the 1950s, one variety, the Gros Michel, dominated the world's commercial business. Found by French botanists in Asia in the 1820s, the Gros Michel was by all accounts a fine banana, richer and sweeter than today's standard banana, and without the latter's bitter aftertaste when green. But it was vulnerable to a soil fungus that produced a wilt known as Panama disease. "Once the fungus gets into the soil, it remains there for many years. There is nothing farmers can do. Even chemical spraying won't get rid of it," says Rodomiro Ortiz, director of the International Institute for Tropical Agriculture in Ibadan, Nigeria. So plantation owners played a running game, abandoning infested fields and moving to "clean" land – until they ran out of clean land in the 1950s and had to abandon the Gros Michel. Its successor, and still the reigning commercial king, is the Cavendish banana, a 19th century British discovery from southern China. The Cavendish is resistant to Panama disease and, as a result, it literally saved the international banana industry. During the 1960s, it replaced the Gros Michel on supermarket shelves. If you buy a banana today, it is almost certainly a Cavendish. But even so, it is a minority in the world's banana crop.

Comment [KM7]: Answer 5 = A
The effect of fungal infection in soil is often long-lasting

Comment [KM8]: Answer 12 = False
The Gros Michel is still being used as a commercial product.
It was abandoned. It means it was not used any more after the 1950s

Half a billion people in Asia and Africa depend on bananas. Bananas provide the largest source of calories and are eaten daily. Its name is synonymous with food. But the day of reckoning maybe coming for the Cavendish and its indigenous kin. Another fungal disease, Black Sigatoka – which causes brown wounds on leaves and premature fruit ripening – cuts fruit yields by 50 to 70% and reduces the productive life of banana plants from 30 years to as little as two or three. Commercial growers keep Sigatoka at bay by a massive chemical assault. 40 sprayings of fungicide a year is typical. But even so, diseases such as Black Sigatoka are getting more and more difficult to control. "As soon as you bring in a new fungicide, they develop resistance," says Frison. "One thing we can be sure of is that the Sigatoka won't lose in the battle." Poor farmers, who cannot afford chemicals, have it even worse. They can do little more than watch their plants die. "Most of the banana trees in Amazonia have already been destroyed by the disease" says Luadir Gesparotto, Brazil's leading banana pathologist with the government research agency EMBRAPA. Production is likely to fall by 70% as the disease spreads, he predicts. The only option would be to find a new variety.

Comment [KM9]: Answer 13
Banana is the main food in some countries.

Comment [KM10]: Answer 7 = C
Fungicide is a sort of chemical spray
Banana disease may develop resistance to chemical sprays.

Comment [KM11]: Answer 8 = E
A banana disease has destroyed a large number of banana plantations.

But how? Almost all edible varieties are susceptible to the diseases, so growers cannot simply change to a different banana. With most crops, such a threat would unleash an army of breeders, scouring the world for resistant relatives whose traits they can breed into commercial varieties. Not so with the banana. Because all edible varieties are sterile, bringing in new genetic traits to help cope with pests and diseases is nearly

impossible. Nearly, but not totally. Very rarely, a sterile banana will experience a genetic accident that allows an almost normal seed to develop, giving breeders a tiny window for improvement. Breeders at the Honduran Foundation of Agricultural Research have tried to exploit this to create disease-resistant varieties. Further backcrossing with wild bananas yielded a new seedless banana resistant to both black Sigatoka and Panama disease.

Neither Western supermarket consumers nor peasant growers like the new hybrid. Some accuse it of tasting more like an apple than a banana. Not surprisingly, the majority of plant breeders have until now turned their backs on the banana and got to work on easier plants. And commercial banana companies are now washing their hands of the whole breeding effort, preferring to fund a search for new fungicides instead. "We supported a breeding programme for 40 years, but it wasn't able to develop an alternative to Cavendish. It was very expensive and we got nothing back," says **Ronald Romero**, head of research at Chiquita, one of the Big Three companies that dominate the international banana trade.

Last year, a global consortium of scientists led by **Frison** announced plans to sequence the banana genome within five years. It would be the first edible fruit to be sequenced. Well, almost edible. The group will actually be sequencing inedible wild bananas from East Asia because many of these are resistant to black Sigatoka. If they can pinpoint the genes that help these wild varieties to resist black Sigatoka, the protective genes could be introduced into laboratory tissue cultures of cell from edible varieties. These could then be propagated into new, resistant plants and passed on to farmers.

It sounds promising, but the big banana companies have, until now, refused to get involved in GM research for fear of alienating their customers. "Biotechnology is extremely expensive and there are serious questions about consumer acceptance," says **David McLaughlin**, Chiquita's senior director for environmental affairs. With scant funding from the companies, the banana genome researchers are focusing on the other end of the spectrum. Even if they can identify the crucial genes, they will be a long way from developing new varieties that smallholders will find suitable and affordable. But whatever biotechnology's academic interest, it is the only hope for the banana. Without it, banana production worldwide will head into a tailspin. We may even see the extinction of the banana as both a lifesaver for hungry and impoverished Africans and as the most popular product on the world's supermarket shelves.

Comment [KM12]: Answer 6 = D
A commercial manufacturer gave up on breeding bananas for disease resistant species.

Comment [KM13]: Answer 9 = B
Consumers would not accept genetically altered crop.

Questions 1-3

Complete the sentences below with NO MORE THAN THREE WORDS from the passage. Write your answers in boxes 1-3 on your answer sheet.

4. The banana was first eaten as a fruit by humans almost **TEN THOUSAND** years ago.
5. Bananas were first planted in **SOUTH-EAST ASIA**
6. The taste of wild bananas is adversely affected by its **(HARD) SEEDS**

Questions 4-10

Look at the following statements (Questions 4-10) and the list of people below. Match each statement with the correct person, A-F. Write the correct letter, A-F, in boxes 4-10 on your answer sheet. NB You may use any letter more than once.

14. A pest invasion may seriously damage the banana industry. = F
15. The effect of fungal infection in soil is often long-lasting. = A
16. A commercial manufacturer gave up on breeding bananas for disease resistant species. = D
17. Banana disease may develop resistance to chemical sprays. = C
18. A banana disease has destroyed a large number of banana plantations. = E
19. Consumers would not accept genetically altered crop. = B
20. Lessons can be learned from bananas for other crops. = C

List of people

- A Rodomiro Ortiz
- B David McLaughlin
- C Emile Frison
- D Ronald Romero
- E Luadir Gasparotto
- F Geoff Hawtin

Questions 11-13

Do the following statements agree with the information given in Reading Passage 1? In boxes 11-13 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 |

14. The banana is the oldest known fruit. = NG
15. The Gros Michel is still being used as a commercial product. = F
16. Banana is the main food in some countries. = T

Passage 2 – Spend 20 minutes. Questions 14-26**Coastal Archaeology of Britain**

The recognition of the wealth and diversity of England's coastal archaeology has been one of the most important developments of recent years. Some elements of this enormous resource have long been known. The so-called 'submerged forests' off the coasts of England, sometimes with clear evidence of human activity, had attracted the interest of antiquarians since at least the eighteenth century, but serious and systematic attention has been given to the archaeological potential of the coast only since the early 1980s.

It is possible to trace a variety of causes for this concentration of effort and interest. In the 1980s and 1990s scientific research into climate change and its environmental impact spilled over into a much broader public debate as awareness of these issues grew; the prospect of rising sea levels over the next century, and their impact on current coastal environments, has been a particular focus for concern. At the same time archaeologists were beginning to recognise that the destruction caused by natural processes of coastal erosion and by human activity was having an increasing impact on the archaeological resource of the coast.

The dominant process affecting the physical form of England in the post-glacial period has been the rise in the altitude of sea level relative to the land, as the glaciers melted and the landmass re-adjusted. The encroachment of the sea, the loss of huge areas of land now under the North Sea and the English Channel, and especially the loss of the land bridge between England and France, which finally made Britain an island, must have been immensely significant factors in the lives of our prehistoric ancestors. Yet the way in which prehistoric communities adjusted to these environmental changes has seldom been a major theme in discussions of the period. One factor contributing to this has been that, although the rise in relative sea level is comparatively well documented, we know little about the constant reconfiguration of the coastline. This was affected by many processes, mostly quite localised, which have not yet been adequately researched. The detailed reconstruction of coastline histories and the changing environments available for human use will be an important theme for future research.

So great has been the rise in sea level and the consequent regression of the coast that much of the archaeological evidence now exposed in the coastal zone, whether being eroded or exposed as a buried land surface, is derived from what was originally terrestrial occupation. Its current location in the coastal zone is the product of later

Comment [KM14]: Answer 14

= B

The rising awareness of climate change

Comment [KM15]: Answer 17 = True

England lost much of its land after the Ice Age due to the rising sea level

Comment [KM16]: Answer 18 = False

The passage says constant reconfiguration but question says periodically

The coastline of England has changed periodically.

unrelated processes, and it can tell us little about past adaptation to the sea. Estimates of its significance will need to be made in the context of other related evidence from dry land sites. Nevertheless, its physical environment means that preservation is often excellent, for example in the case of the Neolithic structure excavated at the Stumble in Essex.

Comment [KM17]: Answer 19 = T
Coastal archaeological evidence may be well-protected by sea water

In some cases these buried land surfaces do contain evidence for human exploitation of what was a coastal environment, and elsewhere along the modern coast there is similar evidence. Where the evidence does relate to past human exploitation of the resources and the opportunities offered by the sea and the coast, it is both diverse and as yet little understood. We are not yet in a position to make even preliminary estimates of answers to such fundamental questions as the extent to which the sea and the coast affected human life in the past, what percentage of the population at any time lived within reach of the sea, or whether human settlements in coastal environments showed a distinct character from those inland.

Comment [KM18]: Answer 24
It is difficult to understand how many people lived close to the sea.

The most striking evidence for use of the sea is in the form of boats, yet we still have much to learn about their production and use. Most of the known wrecks around our coast are not unexpectedly of post-medieval date, and offer an unparalleled opportunity for research, which has as yet been little used. The prehistoric sewn-plank boats such as those from the Humber estuary and Dover all seem to belong to the second millennium BC; after this there is a gap in the record of a millennium, which cannot yet be explained, before boats reappear, but built using a very different technology. Boatbuilding must have been an extremely important activity around much of our coast, yet we know almost nothing about it. Boats were some of the most complex artefacts produced by pre-modern societies, and further research on their production and use make an important contribution to our understanding of past attitudes to technology and technological change.

Comment [KM19]: Answer 15 = C
The use of boats had not been recorded for a thousand years.

Comment [KM20]: Answer 21 = NG
Similar boats were also discovered in many other European countries.
No mention is given whether such boats were simple or not

Comment [KM21]: Answer 20 = F
The design of boats used by pre-modern people was very simple

Comment [KM22]: Answer 25
Our knowledge of boat evidence is limited.

Boats needed landing places, yet here again our knowledge is very patchy. In many cases the natural shores and beaches would have sufficed, leaving little or no archaeological trace, but especially in later periods, many ports and harbours, as well as smaller facilities such as quays, wharves, and jetties, were built. Despite a growth of interest in the waterfront archaeology of some of our more important Roman and medieval towns, very little attention has been paid to the multitude of smaller landing places. Redevelopment of harbour sites and other development and natural pressures along the coast are subjecting these important locations to unprecedented threats, yet few surveys of such sites have been undertaken.

One of the most important revelations of recent research has been the extent of industrial activity along the coast. Fishing and salt production are among the better documented activities, but even here our knowledge is patchy. Many forms of fishing will leave little archaeological trace, and one of the surprises of recent survey has been the extent of past investment in facilities for procuring fish and shellfish. Elaborate wooden fish weirs, often of considerable extent and responsive to aerial photography in shallow water, have been identified in areas such as Essex and the Severn estuary. The production of salt, especially in the late Iron Age and early Roman periods, has been recognised for some time, especially in the Thames estuary and around the Solent and Poole Harbour, but the reasons for the decline of that industry and the nature of later coastal salt working are much less well understood. Other industries were also located along the coast, either because the raw materials outcropped there or for ease of working and transport: mineral resources such as sand, gravel, stone, coal, ironstone, and alum were all exploited. These industries are poorly documented, but their remains are sometimes extensive and striking.

**Comment [KM23]: Answer 16 = D
Fisheries**

Weir - an enclosure of stakes set in a stream as a trap for fish.

Some appreciation of the variety and importance of the archaeological remains preserved in the coastal zone, albeit only in preliminary form, can thus be gained from recent work, but the complexity of the problem of managing that resource is also being realised. The problem arises not only from the scale and variety of the archaeological remains, but also from two other sources: the very varied natural and human threats to the resource, and the complex web of organisations with authority over, or interests in, the coastal zone. Human threats include the redevelopment of historic towns and old dockland areas, and the increased importance of the coast for the leisure and tourism industries, resulting in pressure for the increased provision of facilities such as marinas. The larger size of ferries has also caused an increase in the damage caused by their wash to fragile deposits in the intertidal zone. The most significant natural threat is the predicted rise in sea level over the next century, especially in the south and east of England. Its impact on archaeology is not easy to predict, and though it is likely to be highly localised, it will be at a scale much larger than that of most archaeological sites. Thus protecting one site may simply result in transposing the threat to a point further along the coast. The management of the archaeological remains will have to be considered in a much longer time scale and a much wider geographical scale than is common in the case of dry land sites, and this will pose a serious challenge for archaeologists.

Comment [KM24]: Answer 22 = T
There are few documents relating to mineral exploitation

Comment [KM25]: Answer 26
Human development threatens the archaeological remains.

Comment [KM26]: Answer 23 = T
Large passenger boats are causing increasing damage to the seashore

Questions 14-16

Choose the correct letter, A, B, C or D. Write answers in boxes 14-16 on your sheet.

15. What has caused public interest in coastal archaeology in recent years?
 E. The rapid development of England's coastal archaeology
F. The rising awareness of climate change
 G. The discovery of an underwater forest
 H. The systematic research conducted on coastal archaeological findings
16. What does the passage say about the evidence of boats?
 E. There's enough knowledge of the boatbuilding technology of the prehistoric people.
 F. Many of the boats discovered were found in harbours.
G. The use of boats had not been recorded for a thousand years.
 H. Boats were first used for fishing.
17. What can be discovered from the air?
 A. Salt mines
 E. Roman towns
 F. Harbours
G. Fisheries

QUESTIONS 17-23

Do the following statements agree with the information given in 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

24. England lost much of its land after the Ice Age due to the rising sea level. = T
 25. The coastline of England has changed periodically. = F
 26. Coastal archaeological evidence may be well-protected by sea water. = T
 27. The design of boats used by pre-modem people was very simple. = F
 28. Similar boats were also discovered in many other European countries. = NG
 29. There are few documents relating to mineral exploitation.= T
 30. Large passenger boats are causing increasing damage to the seashore = T

Questions 24-26

Choose THREE letters from A-G. Write your answer in boxes 24-26 on your answer sheet. Which THREE of the following statements are mentioned in the passage?

- A How coastal archaeology was originally discovered
B It is difficult to understand how many people lived close to the sea.
 C How much the prehistoric communities understand the climate change.
D Our knowledge of boat evidence is limited.
 E Some fishing grounds were converted to ports.
F Human development threatens the archaeological remains.
 G Coastal archaeology will become more important in the future.

Passage 3**Travel Books**

There are many reasons why individuals have traveled beyond their own societies. Some travelers may have simply desired to satisfy curiosity about the larger world. Until recent times, however, did travelers start their journey for reasons other than mere curiosity. While the travelers' accounts give much valuable information on these foreign lands and provide a window for the understanding of the local cultures and histories, they are also a mirror to the travelers themselves, for these accounts help them to have a better understanding of themselves.

Comment [KM27]: Answer 27 = C
Knowing other people and places better

Records of foreign travel appeared soon after the invention of writing, and fragmentary travel accounts appeared in both Mesopotamia and Egypt in ancient times. After the formation of large, imperial states in the classical world, travel accounts emerged as a prominent literary genre in many lands, and they held especially strong appeal for rulers desiring useful knowledge about their realms. The Greek historian Herodotus reported on his travels in Egypt and Anatolia in researching the history of the Persian wars. The Chinese envoy Zhang Qian described much of central Asia as far west as Bactria (modern-day Afghanistan) on the basis of travels undertaken in the first century BCE while searching for allies for the Han dynasty. Hellenistic and Roman geographers such as Ptolemy, Strabo, and Pliny the Elder relied on their own travels through much of the Mediterranean world as well as reports of other travelers to compile vast compendia of geographical knowledge.

Comment [KM28]: Answer 28 = B
Because travelers reflect upon their own society and life

Comment [KM29]: Answer 37
They desired knowledge of their empire.

Comment [KM30]: Answer 29
To gather information
for the study of **PERSIAN WARS**

Comment [KM31]: Answer 30
To seek 30 **ALLIES**

Comment [KM32]: Answer 31
To acquire 31 **GEOGRAPHICAL KNOWLEDGE**

Comment [KM33]: Answer 32
Trading and 32 **PILGRIMAGE**

Comment [KM34]: Answer 38
Muslim pilgrims

During the postclassical era (about 500 to 1500 CE), trade and pilgrimage emerged as major incentives for travel to foreign lands. Muslim merchants sought trading opportunities throughout much of the eastern hemisphere. They described lands, peoples, and commercial products of the Indian Ocean basin from east Africa to Indonesia, and they supplied the first written accounts of societies in Sub-Saharan West Africa. While merchants set out in search of trade and profit, devout Muslims traveled as pilgrims to Mecca to make their hajj and visit the holy sites of Islam. Since the prophet Muhammad's original pilgrimage to Mecca, untold millions of Muslims have followed his example, and thousands of hajj accounts have related their experiences. East Asian travelers were not quite so prominent as Muslims during the postclassical era, but they too followed many of the highways and sea-lanes of the eastern hemisphere. Chinese merchants frequently visited southeast Asia and India, occasionally venturing even to east Africa, and devout East Asian Buddhists undertook distant pilgrimages. Between the 5th and 9th centuries CE, hundreds and possibly even thousands of Chinese Buddhists traveled to India to study with Buddhist teachers,

collect sacred texts, and visit holy sites. Written accounts recorded the experiences of many pilgrims, such as Faxian, Xuanzang, and Yijing. Though not so numerous as the Chinese pilgrims, Buddhists from Japan, Korea, and other lands also ventured abroad in the interests of spiritual enlightenment.

Comment [KM35]: Answer 33
INDIA

Medieval Europeans did not hit the roads in such large numbers as their Muslim and East Asian counterparts during the early part of the postclassical era, although gradually increasing crowds of Christian pilgrims flowed to Jerusalem, Rome, Santiago de Compostela (in northern Spain), and other sites. After the 12th century, however, merchants, pilgrims, and missionaries from medieval Europe traveled widely and left numerous travel accounts, of which Marco Polo's description of his travels and sojourn in China is the best known. As they became familiar with the larger world of the eastern hemisphere—and the profitable commercial opportunities that it offered—European people worked to find new and more direct routes to Asian and African markets. Their efforts took them not only to all parts of the eastern hemisphere, but eventually to the Americas and Oceania as well.

If Muslim and Chinese peoples dominated travel and travel writing in postclassical times, European explorers, conquerors, merchants, and missionaries took center stage during the early modern era (about 1500 to 1800 CE). By no means did Muslim and Chinese travel come to a halt in early modern times. But European peoples ventured to the distant corners of the globe, and European printing presses churned out thousands of travel accounts that described foreign lands and peoples for a reading public with an apparently insatiable appetite for news about the larger world. The volume of travel literature was so great that several editors, including Giambattista Ramusio, Richard Hakluyt, Theodore de Bry, and Samuel Purchas, assembled numerous travel accounts and made them available in enormous published collections.

Comment [KM36]: Answer 39
meet the public's interest.

During the 19th century, European travelers made their way to the interior regions of Africa and the Americas, generating a fresh round of travel writing as they did so. Meanwhile, European colonial administrators devoted numerous writings to the societies of their colonial subjects, particularly in Asian and African colonies they established. By midcentury, attention was flowing also in the other direction. Painfully aware of the military and technological prowess of European and Euro-American societies, Asian travelers in particular visited Europe and the United States in hopes of discovering principles useful for the reorganisation of their own societies. Among the most prominent of these travelers who made extensive use of their overseas

Comment [KM37]: Answer 34
To provide information for the 34 COLONIES they set up

Comment [KM38]: Answer 35
To study the 35 PRINCIPLES for the reorganization of their societies

observations and experiences in their own writings were the Japanese reformer Fukuzawa Yukichi and the Chinese revolutionary Sun Yat-sen.

With the development of inexpensive and reliable means of mass transport, the 20th century witnessed explosions both in the frequency of long-distance travel and in the volume of travel writing. While a great deal of travel took place for reasons of business, administration, diplomacy, pilgrimage, and missionary work, as in ages past, increasingly effective modes of mass transport made it possible for new kinds of travel to flourish. The most distinctive of them was mass tourism, which emerged as a major form of consumption for individuals living in the world's wealthy societies. Tourism enabled consumers to get away from home to see the sights in Rome, take a cruise through the Caribbean, walk the Great Wall of China, visit some wineries in Bordeaux, or go on safari in Kenya. A peculiar variant of the travel account arose to meet the needs of these tourists: the guidebook, which offered advice on food, lodging, shopping, local customs, and all the sights that visitors should not miss seeing. Tourism has had a massive economic impact throughout the world, but other new forms of travel have also had considerable influence in contemporary times.

(**peoples** – The human beings of a particular nation, community or ethnic group)

Anywhere else the use of the word peoples is wrong

Questions 27-28

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

27 What were most people traveling for in the early days?

- A Studying their own cultures
- B Business
- C **Knowing other people and places better**
- D Writing travel books

28. Why did the author say writing travel books is also "a mirror" for travelers themselves?

- A Because travelers record their own experiences.
- B **Because travelers reflect upon their own society and life.**
- C Because it increases knowledge of foreign cultures.
- D Because it is related to the development of human society.

Comment [KM39]: Answer 40
The development of travel books
The answer is in the gist of the whole passage

Comment [KM40]: Answer 36
 People from 36 WEALTHY countries

Questions 29-36

Complete the table below. Write NO MORE THAN TWO WORDS from passage 3

TIME	TRAVELER	DESTINATION	PURPOSE OF TRAVEL
Classical Greece	Herodotus	Egypt and Anatolia	To gather information for the study of 29 PERSIAN WARS
Han Dynasty	Zhang Qian	Central Asia	To seek 30 ALLIES
Roman Empire	Ptolemy, Strabo, Pliny the Elder	Mediterranean	To acquire 31 GEOGRAPHICAL KNOWLEDGE
Post-classical Era (about 500 to 1500 CE)	Muslims	From east Africa to Indonesia Mecca	Trading and 32 PILGRIMAGE
5th to 9th centuries CE	Chinese Buddhists	33 INDIA	To collect Buddhist texts and for spiritual enlightenment
Early modern era (about 1500 to 1800CE)	European explorers	New World	To satisfy public curiosity for the New World
During 19th century	Colonial administrator	Asia, Africa	To provide information for the 34 COLONIES they set up
By the mid-century of the 1900s	Sun Yat-sen Fukuzawa Yukichi	Europe and United States	To study the 35 PRINCIPLES for the reorganization of their societies
20th century	People from 36 WEALTHY countries	Mass tourism	Entertainment and pleasure

Questions 37-40

Choose the correct letter, A, B, C or D. Write your answers in boxes 37-40

- 37 Why were the imperial rulers especially interested in these travel stories?
 A Reading travel stories was a popular pastime.
 B The accounts are often truthful rather than fictional.
 C Travel books played an important role in literature.
 D **They desired knowledge of their empire.**
- 38 Who were the largest group to record their spiritual trip during the postclassical era?
 A Muslim traders
 B **Muslim pilgrims**
 C Chinese Buddhists
 D Indian Buddhist teachers
- 39 During the early modern era, a large number of travel books were published to
 A **meet the public's interest.**
 B explore new business opportunities.
 C encourage trips to the new world.
 D record the larger world.
- 40 What's the main theme of the passage?
 A The production of travel books
 B The literary status of travel books
 C The historical significance of travel books
 D **The development of travel books**

READING TEST 2**Passage one – spend 20 minutes****Ambergris***What is it and where does it come from?*

Ambergris was used to perfume cosmetics in the days of ancient Mesopotamia and almost every civilization on the earth has a brush with Ambergris. Before 1,000 AD, the Chinese names ambergris as *lung sien hiang*, "dragon's spittle perfume," as they think that it was produced from the drooling of dragons sleeping on rocks at the edge of a sea. The Arabs knew ambergris as *anbar* who believed that it is produced from springs near seas. It also gets its name from here. **For centuries, this substance has also been used as a flavouring for food.**

 Comment [KM41]: Answer 2 – A - refers to ambergris only

During the Middle Ages, Europeans used ambergris as a remedy for headaches, colds, epilepsy, and other ailments. **In the 1851 whaling novel *Moby-Dick*, Herman Melville claimed that ambergris was "largely used in perfumery."** But nobody ever knew where it really came from. Experts were still guessing its origin thousands of years later, until the long ages of guesswork ended in the 1720's, when Nantucket whalers found gobs of the costly material inside the stomachs of sperm whales. Industrial whaling quickly burgeoned. **By 20th century ambergris is mainly recovered from inside the carcasses of sperm whales.**

Comment [KM42]: Answer 5 – A – referred to by Harman Melville

Through countless ages, people have found pieces of ambergris on sandy beaches. It was named *grey amber* to distinguish it from golden amber, another rare treasure. **Both of them were among the most sought-after substances in the world, almost as valuable as gold. (Ambergris sells for roughly \$20 a gram, slightly less than gold at \$30 a gram.)** Amber floats in salt water, and in old times the origin of both these substances was mysterious. But it turned out that amber and ambergris have little in common. Amber is a fossilized resin from trees that was quite familiar to Europeans long before the discovery of the New World, and prized for jewelry. Although considered a gem, **amber is a hard, transparent**, wholly-organic material derived from the resin of extinct species of trees, mainly pines.

Comment [KM43]: Answer 10 = T
Carcass means dead body of an animal

Comment [KM44]: Answer 1. - C – Refers to both Ambergris and amber

Comment [KM45]: Answer 3 – D – the cost is given but neither of the two were being used as currency

Comment [KM46]: Answer 11 = NG
Whether or not it is becoming expensive than before is not given

Comment [KM47]: Answer 4 – B – transparent means see-through

To the earliest Western chroniclers, ambergris was variously thought to come from the same bituminous sea founts as amber, from the sperm of fishes or whales, from the droppings of strange sea birds (probably because of confusion over the included beaks of squid) or from the large hives of bees living near the

sea. Marco Polo was the first Western chronicler who correctly attributed ambergris to sperm whales and its vomit.

As sperm whales navigate in the oceans, they often dive down to 2 km or more below the sea level to prey on squid, most famously the Giant Squid. It's commonly accepted that ambergris forms in the whale's gut or intestines as the creature attempts to "deal" with squid beaks. **Sperm whales are rather partial to squid, but seemingly struggle to digest the hard, sharp, parrot-like beaks.** It is thought their stomach juices become hyperactive trying to process the irritants, and eventually hard, resinous lumps are formed around the beaks, and then **expelled from their innards by vomiting.** When a whale initially vomits up **ambergris, it is soft and has a terrible smell. Some marine biologists compare it to the unpleasant smell of cow dung. But after floating on the salty ocean for about a decade, the substance hardens with air and sun into a smooth, waxy, usually rounded piece of nostril heaven.** **The dung smell is gone, replaced by a sweet, smooth, musky and pleasant earthy aroma.**

Comment [KM48]: Answer 7 Beaks

Comment [KM49]: Answer 8 = vomiting
Innards means intestines
Drive means expelled

Comment [KM50]: Answer 9 = hardens

Comment [KM51]: Answer 6 – A – has a sweet smell.

Since ambergris is derived from animals, naturally a question of ethics arises, and in the case of ambergris, it is very important to consider. Sperm whales are an endangered species, whose populations started to decline as far back as the 19th century due to the high demand for their highly emollient oil, and today their stocks still have not recovered. During the 1970's, the *Save the Whales* movement brought the plight of whales to international recognition. Many people now believe that whales are "saved". This couldn't be further from the truth. All around the world, whaling still exists. Many countries continue to hunt whales, in spite of international treaties to protect them. Many marine researchers are concerned that even the trade in naturally found ambergris can be harmful by creating further incentives to hunt whales for this valuable substance.

One of the forms ambergris is used today is as a valuable fixative in perfumes to enhance and prolong the scent. But nowadays, since ambergris is rare and expensive, and big fragrance suppliers that make most of the fragrances on the market today do not deal in it for reasons of cost, availability and murky legal issues, most perfumeries prefer to add a chemical derivative which mimics the properties of ambergris. As a fragrance consumer, you can assume that there is no natural ambergris in your perfume bottle, unless the company advertises this fact and unless you own vintage fragrances created before the 1980s. If you are wondering if you have been wearing a perfume with this legendary ingredient, you may want to review

Comment [KM52]: Answer 13 – NG - no mention about new uses today

Comment [KM53]: Answer 12 - False = it is not popular in perfumes today

your scent collection. Here are a few of some of the top ambergris containing perfumes: Givenchy Amarige, Chanel No. 5, and Gucci Guilty.

Questions 1-6

Classify the following information as referring to

- A ambergris only
- B amber only
- C both ambergris and amber
- D neither ambergris nor amber

Write the correct letter, A, B, C, or D in boxes 1-6 on your answer sheet.

- 7. being expensive = C
- 8. adds flavor to food = A
- 9. used as currency = D
- 10. being see-through = B
- 11. referred to by Herman Melville = A
- 12. produces sweet smell - A

Questions 7-9

Complete the sentences below with NO MORE THAN ONE WORD from the passage. Write your answers in boxes 7-9 on your answer sheet.

- 10 Sperm whales can't digest the **BEAKS** of the squids.
- 11 Sperm whales drive the irritants out of their intestines by **VOMITING**.
- 12 The vomit of sperm whale gradually **HARDENS** on contact of air before having pleasant smell.

Questions 10-13

Do the following statements agree with the information given in Reading Passage 1?

In boxes 10-13 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

- 14 Most ambergris comes from the dead whales today. = T
- 15 Ambergris is becoming more expensive than before. = NG
- 16 Ambergris is still a popular ingredient in perfume production today. = F
- 17 New uses of ambergris have been discovered recently. = NG

READING PASSAGE 2

You should spend about 20 minutes on Questions 14-26

Questions 14-20

Reading passage 2 has seven paragraphs, A-G. Choose the correct heading for each paragraph from the list of headings below. Write the correct number, i-xi, in boxes 14-20 on your answer sheet.

List of Headings

- xii. Why better food helps students' learning
- xiii. Becoming the headmaster of Msekeni
- xiv. Surprising use of school premises
- xv. Global perspective
- xvi. Why students were undernourished
- xvii. Surprising academic outcome
- xviii. An innovative program to help girls
- xix. How food program is operated
- xx. How food program affects school attendance
- xxi. None of the usual reasons
- xxii. How to maintain academic standard

21 Paragraph A = iii

22 Paragraph B = x

23 Paragraph C = viii

24 Paragraph D = ix

25 Paragraph E = vi

26 Paragraph F = i

27 Paragraph G = iv

Tackling Hunger in Msekeni

H. There are not enough classrooms at the Msekeni primary school, so **half the lessons take place in the shade of yellow-blossomed acacia trees**. Given this shortage, it might seem odd that one of the school's purpose-built classrooms has been emptied of pupils and turned into a storeroom for sacks of grain. But it makes sense. Food matters more than shelter.

Comment [KM54]: Answer 25 - Some children are taught in the open air.

I. Msekeni is in one of the poorer parts of Malawi, a landlocked southern African country of exceptional beauty and great poverty. No war lays waste Malawi, nor is the land unusually crowded or infertile, but Malawians still have trouble finding enough to eat. Half of the children under five are underfed to the point of stunting.

Comment [KM55]: Answer 14 – iii - Surprising use of school premises

Comment [KM56]: Answer 15 – x - None of the usual reasons

Hunger blights most aspects of Malawian life, so the country is as good a place as any to investigate how nutrition affects development, and vice versa.

- J. The headmaster at Msekeni, Bernard Kumanda, has strong views on the subject. He thinks food is a priceless teaching aid. Since 1999, his pupils have received free school lunches. Donors such as the World Food Programme (WFP) provide the food: those sacks of grain (mostly mixed maize and soyabean flour, enriched with vitamin A) in that converted classroom. Local volunteers do the cooking—turning the dry ingredients into a bland but nutritious slop, and spooning it out on to plastic plates. The children line up in large crowds, cheerfully singing a song called "We are getting porridge".

Comment [KM57]: Answer 16 – viii - How food program is operated

- K. When the school's feeding programme was introduced, enrolment at Msekeni doubled. Some of the new pupils had switched from nearby schools that did not give out free porridge, but most were children whose families had previously kept them at home to work. These families were so poor that the long-term benefits of education seemed unattractive when set against the short-term gain of sending children out to gather **firewood** or help in the fields. One plate of porridge a day completely altered the calculation. A child fed at school will not howl so plaintively for food at home. Girls, who are more likely than boys to be kept out of school, are given **extra snacks** to take home.

Comment [KM58]: Answer 17 – ix - How food program affects school attendance

- L. When a school takes in a horde of extra students from the poorest homes, you would expect standards to drop. Anywhere in the world, poor kids tend to perform worse than their better-off classmates. When **the influx of new pupils is not accompanied by any increase in the number of teachers, as was the case at Msekeni**, you would expect standards to fall even further. But they have not. Pass rates at Msekeni improved dramatically, from 30% to **85%**. Although this was an exceptional example, the nationwide results of school feeding programmes were still pretty good. On average, after a Malawian school started handing out free food it attracted 38% more girls and 24% more boys. The pass rate for boys stayed about the same, while for girls it improved by 9.5%.

Comment [KM59]: Answer 22

Comment [KM60]: Answer 21

Comment [KM61]: Answer 26

Comment [KM62]: Answer 23

Comment [KM63]: Answer 18 – vi - Surprising academic outcome

- M. Better nutrition makes for brighter children. Most immediately, well-fed children find it easier to concentrate. It is hard to focus the mind on long division when your stomach is screaming for food. Mr Kumanda says that it used to be easy to spot the kids who were really undernourished. "They were the ones who stared into space and didn't respond when you asked them questions," he says. More crucially, though, **more and better food helps brains grow and develop**. Like any other organ in the body, the brain needs nutrition and exercise. But if it is starved

Comment [KM64]: Answer 19 – i - Why better food helps students' learning

of the necessary calories, proteins and micronutrients, it is stunted, perhaps not as severely as a muscle would be, but stunted nonetheless. That is why feeding children at schools works so well. And the fact that the effect of feeding was more pronounced on girls than on boys gives a clue to who eats first in rural Malawian households. It isn't the girls.

- N. On a global scale, the good news is that people are eating better than ever before. Homo sapiens has grown **50%** bigger since the industrial revolution. Three centuries ago, chronic malnutrition was more or less universal. Now, it is extremely rare in rich countries. In developing countries, where most people live, plates and rice bowls are also fuller than ever before. The proportion of children under five in the developing world who are malnourished to the point of stunting fell from 39% in 1990 to 30% in 2000, says the World Health Organisation (WHO). In other places, the battle against hunger is steadily being won. Better nutrition is making people cleverer and more energetic, which will help them grow more prosperous. And when they eventually join the ranks of the well-off, they can start fretting about growing too fat.

Comment [KM65]: Answer 20 – iv – Global perspective

Comment [KM66]: Answer 24

Questions 21-24

Complete the sentences below using **NO MORE THAN TWO WORDS / OR A NUMBER** from the passage. Write your answers in boxes 21-24 on your answer sheet.

- 25 In Kumanda's school **EXTRA SNACKS** are given to girls after the end of the school day.
 26 Many children from poor families were sent to collect **FIREWOOD** from the field.
 27 Thanks to the free food program, **85%** of students passed the test.
 28 The modern human is **50%** bigger than before after the industrial revolution.

Questions 25-26

Choose **TWO** letters, A-E Write the correct letters in boxes 25 and 26 on your answer sheet.

Which **TWO** of the following statements are true?

- G. **Some children are taught in the open air.**
 H. Bernard Kumanda became the headmaster in 1991.
 I. **No new staffs were recruited when attendance rose.**
 J. Girls are often treated equally with boys in Malawi.
 K. Scientists have devised ways to detect the most underfed students in school.
 L. WHO is worried about malnutrition among kids in developing countries.

Reading Passage 3 Spend 20 minutes on questions 27-40

Placebo effect – The Power of Nothing

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

Well yes, it could—and often well enough to earn you a living. A good living if you are sufficiently convincing or, better still, really believe in your therapy. Many illnesses get better on their own, so if you are lucky and administer your treatment at just the right time you'll get the credit. But that's only part of it. Some of the improvement really would be down to you. Not necessarily because you'd recommended ginseng rather than camomile tea or used this crystal as opposed to that pressure point. Nothing so specific. Your healing power would be the outcome of a paradoxical force that conventional medicine recognises but remains oddly ambivalent about: the placebo effect.

Placebos are treatments that have no direct effect on the body, yet still work because the patient has faith in their power to heal. Most often the term refers to a dummy pill, but it applies just as much to any device or procedure, from a sticking plaster to a crystal to an operation. The existence of the placebo effect implies that even quackery may confer real benefits, which is why any mention of placebo is a touchy subject for many practitioners of complementary and alternative medicine (CAM), who are likely to regard it as tantamount to a charge of charlatanism. In fact, the placebo effect is a powerful part of all medical care, orthodox or otherwise, though its role is often neglected and misunderstood.

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

Comment [KM67]: Answer 27 – D - Appointments with alternative practitioner ought to last a minimum length of time

Comment [KM68]: Answer 28 – A - An alternative practitioner's description of treatment should be easy to understand

Comment [KM69]: Answer 29 – G - An alternative practitioner who has faith in what he does can earn a high income

Comment [KM70]: Answer 30 = B - The illness of patients convinced of alternative practice ought to improve by itself

Comment [KM71]: Answer 31 = H - Improvements of patients receiving alternative practice do not rely on any specific treatment

Comment [KM72]: Answer 32 – F - Conventional medical doctors should give more recognition

At one level, it should come as no surprise that our state of mind can influence our physiology: anger opens the superficial blood vessels of the face; sadness pumps the tear glands. But exactly how placebos work their medical magic is still largely unknown. **Most of the scant research to date has focused on the control of pain, because it's one of the commonest complaints and lends itself to experimental study.** Here, attention has turned to the endorphins, natural counterparts of morphine that are known to help control pain. "Any of the neurochemicals involved in transmitting pain impulses or modulating them might also be involved in generating the placebo response," says Don Price, an oral surgeon at the University of Florida who studies the placebo effect in dental pain.

Comment [KM73]: Answer 33 = A - people's feelings could affect their physical behavior

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

Comment [KM74]: Answer 34 = D - patients often experience pain and like to complain about it

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

Comment [KM75]: Answer 35 = C - they can be neutralized by introducing naloxone

It matters, too, how the treatment is delivered. **Decades ago, when the major tranquilliser chlorpromazine was being introduced, a doctor in Kansas categorised his colleagues according to whether they were keen on it, openly sceptical of its benefits, or took a "let's try and see" attitude.** His conclusion: **the more enthusiastic the doctor, the better the drug performed.** And this year Ernst surveyed published studies that compared doctors' bedside manners. The studies turned up one consistent finding: "Physicians who adopt a warm, friendly and

Comment [KM76]: Answer 36 - F - There is enough information for scientists to fully understand the placebo effect.

Comment [KM77]: Answer 37 - NG - Nothing said about their marketing

Comment [KM78]: Answer 38 - T - People's preference on brands would also have effect on their healing.

Comment [KM79]: Answer 39 - T - Medical doctors have a range of views of the newly introduced drug of chlorpromazine

reassuring manner," he reported, "are more effective than those whose consultations are formal and do not offer reassurance."

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

Comment [KM80]: Answer 40 – F - Alternative practitioners are seldom known for applying placebo effect.

Questions 27-32

Complete the following sentences with the correct ending. Choose the correct letter, A-H, for each sentence below. Write your answers in boxes 27-32 on your answer sheet.

- 33 Appointments with alternative practitioner = D
- 34 An alternative practitioner's description of treatment = A
- 35 An alternative practitioner who has faith in what he does = G
- 36 The illness of patients convinced of alternative practice = B
- 37 Improvements of patients receiving alternative practice = H
- 38 Conventional medical doctors = F
 - I. should be easy to understand.
 - J. ought to improve by itself.
 - K. should not involve any mysticism.
 - L. ought to last a minimum length of time.
 - M. needs to be treated at the right time.
 - N. should give more recognition.
 - O. can earn high income.
 - P. do not rely on any specific treatment.

Questions 33-35

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

- 33. In the fifth paragraph, the writer uses the example of anger and sadness to illustrate that
 - E. **people's feelings could affect their physical behavior.**
 - F. how placebo achieves its effect is yet to be understood.

- G. scientists don't understand how the mind influences the body.
H. research on the placebo effect is very limited.
34. Research on pain control attracts most of the attention because
E. only a limited number of researches have been conducted so far.
F. scientists have discovered that endorphins can help to reduce pain.
G. pain reducing agents might also be involved in placebo effect.
H. patients often experience pain and like to complain about it.
35. Fabrizio Benedetti's research on endorphins indicates that
E. they are widely used to regulate pain.
F. they can be produced by willful thoughts.
G. they can be neutralized by introducing naloxone.
H. their pain-relieving effects do not last long enough.

Questions 36-40

<i>TRUE</i>	<i>if the statement agrees with the information</i>
<i>FALSE</i>	<i>if the statement contradicts the information</i>
<i>NOT GIVEN</i>	<i>if there is no information on this</i>

36. There is enough information for scientists to fully understand the placebo effect. = F
37. A London based researcher discovered that red pills should be taken off the market. = NG
38. People's preference on brands would also have effect on their healing. = T
39. Medical doctors have a range of views of the newly introduced drug of chlorpromazine. = T
40. Alternative practitioners are seldom known for applying placebo effect. F

Reading test 3

Passage 1 – spend 20 minutes

GOING NOWHERE FAST

THIS is ludicrous! We can talk to people anywhere in the world or fly to meet them in a few hours. We can even send probes to other planets. But when it comes to getting around our cities, we depend on systems that have scarcely changed since the days of Gottlieb Daimler.

Comment [KM81]: IANSWER 1: TRUE - City transport developed slower than other means of communication.

In recent years, the pollution belched out by millions of vehicles has dominated the debate about transport. The problem has even persuaded California - that home of car culture - to curb traffic growth. But no matter how green they become, cars are unlikely to get us around crowded cities any faster. And persuading people to use trains and buses will always be an uphill struggle. Cars, after all, are popular for very good reasons, as anyone with small children or heavy shopping knows.

Comment [KM82]: ANSWER 2 – FALSE - The pollution caused by city transport has been largely ignored

Comment [KM83]: ANSWER 3 – NG - Most states in America have taken actions to reduce vehicle growth. – They have talked about California and no other state

Comment [KM84]: ANSWER 4 – NG - Public transport is particularly difficult to use on steep hills. Here uphill means difficult

Comment [KM85]: Answer 5 – T - Private cars are much more convenient for those who tend to buy a lot of things during shopping

Comment [KM86]: Answer 6 – F - Government should impose compulsory restrictions on car use

So politicians should be trying to lure people out of their cars, not forcing them out. There's certainly no shortage of alternatives. Perhaps the most attractive is the concept known as personal rapid transit (PRT), independently invented in the US and Europe in the 1950s.

Comment [KM87]: Answer 10 – A- PRT only - It is always controlled by a computer

Comment [KM88]: Answer 8 and 9 – C – Answer 8 has been mentioned in another comment – RUF resemble PRT as they don't have to be shared
It is not necessary to share with the general public

The idea is to go to one of many stations and hop into a computer-controlled car, which can whisk you to your destination along a network of guideways. You wouldn't have to share your space with strangers, and with no traffic lights, pedestrians or parked cars to slow things down, PRT guideways can carry far more traffic, nonstop, than any inner city road.

It's a wonderful vision, but the odds are stacked against PRT for a number of reasons. The first cars ran on existing roads, and it was only after they became popular – and after governments started earning revenue from them – that a road network designed specifically for motor vehicles was built. With PRT, the infrastructure would have to come first – and that would cost megabucks. What's more, any transport system that threatened the car's dominance would be up against all those with a stake in maintaining the status quo, from private car

owners to manufacturers and oil multinationals. Even if PRTs were spectacularly successful in trials, it might not make much difference. Superior technology doesn't always triumph, as the VHS versus Betamax and Windows versus Apple Mac battles showed.

Comment [KM89]: Answer 7 – A – PRT only - It is likely to be resisted by both individuals and manufacturers

But "dual-mode" systems might just succeed where PRT seems doomed to fail.

The Danish RUF system envisaged by Palle Jensen, for example, resembles PRT but with one key difference: **vehicles have wheels as well as a slot allowing them to travel on a monorail, so they can drive off the rail onto a normal road.** Once on a road, the occupant would take over from the computer, and the RUF vehicle - the term comes from a Danish saying meaning to "go fast" - would become an electric car.

Comment [KM90]: 7Answer 8 – C - It can run at high speed in cities. PRT is fast – it has been earlier written and RUF resembles PRT. So the statement applies to both

Comment [KM91]: Answer 11 – B – RUF only - It can run on existing roads.

Build a fast network of guideways in a busy city centre and people would have a strong incentive not just to use public RUF vehicles, but also to buy their own dual-mode vehicle. Commuters could drive onto the guideway, sit back and read as they are chauffeured into the city. At work, they would jump out, leaving their vehicles to park themselves. **Unlike PRT, such a system could grow organically, as each network would serve a large area around it and people nearby could buy into it.** And a dual-mode system might even win the support of car manufacturers, who could easily switch to producing dual-mode vehicles.

Comment [KM92]: Answer 12 – B - It can be bought by private buyers.

Of course, creating a new transport system will not be cheap or easy. But unlike adding a dedicated bus lane here or extending the underground railway there, an innovative system such as Jensen's could transform cities.

And it's not just a matter of saving a few minutes a day. According to the Red Cross, more than 30 million people have died in road accidents in the past century—three times the number killed in the First World War—and the annual death toll is rising. And what's more, the Red Cross believes road accidents will become the third biggest cause of death and disability by 2020, ahead of diseases such as AIDS and tuberculosis. Surely we can find a better way to get around?

Questions 1-6

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

TRUE if the statement agrees with the information

FALSE if the statement contradicts the information

NOT GIVEN if there is no information on this

7 City transport developed slower than other means of communication. = T

8 The pollution caused by city transport has been largely ignored. = F

9 Most states in America have taken actions to reduce vehicle growth. = NG

10 Public transport is particularly difficult to use on steep hills. = NG

11 Private cars are much more convenient for those who tend to buy a lot of things during shopping. = T

12 Government should impose compulsory restrictions on car use. = F

Questions 7-12 Classify the following descriptions as referring to

A PRT only

B RUF only

C both PRT and RUF

Write the correct letter, A, B, or C in boxes 7-12 on your answer sheet.

13 It is likely to be resisted by both individuals and manufacturers. = A

14 It can run at high speed in cities. = C

15 It is not necessary to share with the general public. = C

16 It is always controlled by a computer. = A

17 It can run on existing roads. = B

18 It can be bought by private buyers. = B

Question 13

Choose THREE letters, A-G. Which THREE of the following are advantages of the new transport system?

- H. economy
- I. space
- J. **low pollution**
- K. suitability for families
- L. **speed**
- M. **safety**
- N. suitability for children

Comment [KM93]: C,E,F – Pollution mentioned in the 2nd para and the other 2 in the last para

Passage 2 – spend 20 minutes

THE SEEDHUNTERS

With Quarter of the world's plants set to vanish within the next 50 years, Dough Alexander reports on the scientists working against the clock to preserve the Earth's botanical heritage.

They travel the four corners of the globe, scouring jungles, forests and savannas. But they're not looking for ancient artefacts, lost treasure or undiscovered tombs. Just pods. It may lack the romantic allure of archaeology, or the whiff of danger that accompanies going after big game, but seed hunting is an increasingly serious business. Some seek seeds for profit — hunters in the employ of biotechnology firms, pharmaceutical companies and private corporations on the lookout for species that will yield the **drugs or crops** of the future. Others collect to conserve, working to halt the sad slide into **extinction** facing so many plant species.

Comment [KM94]: ANSWER 15

Comment [KM95]: Answer 14

Among the **pioneers** of this botanical treasure hunt was John Tradescant, an English royal gardener who brought back plants and seeds from his journeys abroad in the early 1600s. Later, the English botanist Sir **Joseph Banks** — who was the first director of the Royal Botanic Gardens at Kew and travelled with Captain James Cook on his voyages near the end of the 18th century — was so driven to expand his collections that he sent botanists around the world at his own expense.

Comment [KM96]: ANSWER 16

Comment [KM97]: ANSWER 17

Those heady days of exploration and discovery may be over, but they have been replaced by a pressing need to preserve our natural history for the future. This modern mission drives hunters such as Dr Michiel van Slageren, a good-natured Dutchman who often sports a wide-brimmed hat in the field — he could easily be mistaken for the cinematic hero Indiana Jones. He and three other seed hunters work at the Millennium Seed Bank, an £80million international conservation project that aims to protect the world's most endangered wild plant species.

Comment [KM98]: ANSWER 19 – T - The reason to collect seeds is different from the past.

The group's headquarters are in a modern glass-and-concrete structure on a 200-hectare estate at Wakehurst Place in the West Sussex countryside. Within its **underground vaults** are 260 million dried seeds from 122 countries, all stored at -20 Celsius to survive for centuries.

Comment [KM99]: ANSWER 18

Among the 5,100 species represented are virtually all of Britain's 1,400 native seed-bearing plants, the most complete such collection of any country's flora.

Overseen by the Royal Botanic Gardens, **the Millennium Seed Bank is the world's largest wild-plant depository**. It aims to collect 24,000 species by 2010. The reason is simple: thanks to humanity's efforts, an estimated 25 per cent of the world's plants are on the verge of extinction and may vanish within 50 years. We're currently responsible for habitat destruction on an unprecedented scale, and during the past 400 years, plant species extinction rates have been about 70 times greater than those indicated by the geological record as being 'normal'. Experts predict that during the next 50 years a further one billion hectares of wilderness will be converted to farmland in developing countries alone.

Comment [KM100]: ANSWER 20 - NG - The Millennium Seed Bank is one of the earliest seed banks – NO MENTION WHETHER IT WAS THE EARLIEST

The implications of this loss are enormous. Besides providing **staple food** crops, plants are a source of many **medicines** and the **principal supply of fuel** and building materials in many parts of the world. They also protect soil and help regulate the climate. Yet, across the globe, plant species are being driven to extinction before their potential benefits are discovered.

Comment [KM101]: ANSWER 21 - T - A major reason for plant species extinction is farmland expansion.

Comment [KM102]: Answer 25 - food

Comment [KM103]: Answer 26 - energy

The World Conservation Union has listed 5,714 threatened plant species worldwide, but it admits this is only scratching the surface. With only four per cent of the world's described plants having been evaluated, the true number of threatened species is sure to be much higher. In the UK alone, 300 wild plant species are classified as endangered. The Millennium Seed Bank aims to ensure that even if a plant becomes extinct in the wild, it won't be lost forever. Stored seeds can be used to help restore damaged or destroyed environments or in scientific research to find new benefits for society — in medicine, agriculture or local industry — that would otherwise be lost.

Seed banks are an 'insurance policy' to protect the world's plant heritage for the future, explains Dr. Paul Smith, another Kew seed hunter. "Seed conservation techniques were originally developed by farmers," he says. "Storage is the basis of what we do, conserving seeds until you can use them — just as in farming." Smith says there's no reason why any plant species should become extinct, given today's technology. But he admits that the biggest challenge is finding, naming and categorising all the world's plants. And someone has to gather these seeds before it's too

Comment [KM104]: Answer 22 - T - The method scientists use to store seeds is similar to that used by farmers

late. "There aren't a lot of people out there doing this," he says, "The key is to know the flora from a particular area, and that knowledge takes years to acquire."

Comment [KM105]: Answer 23 – F - Technological development is the only hope to save plant species

There are about 1,470 seed banks scattered around the globe, with a combined total of 5.4 million samples, of which perhaps two million are distinct non-duplicates. Most preserve genetic material for agricultural use in order to ensure crop diversity others aim to conserve wild species, although only 15 per cent of all banked plants are wild.

Many seed banks are themselves under threat due to a lack of funds. Last year, Imperial College, London, examined crop collections from 151 countries and found that while the number of plant samples had increased in two thirds of the countries, budgets had been cut in a quarter and remained static in another 35 per cent. The UN's Food and Agriculture Organisation and the Consultative Group on International Agricultural Research has since set up the Global Conservation Trust, which aims to raise US\$260 million (£156 million) to protect seed banks in perpetuity.

Comment [KM106]: Answer 24 – T - The works of seed conservation are often limited by insufficient financial resources.

Questions 14-18

Complete the summary below using **NO MORE THAN TWO WORDS** from the passage.

People collect seeds for different purposes: some collect to protect certain species from 14 EXTINCTION; others collect seeds for their potential to produce 15 DRUGS, CROPS

They are called the seed hunters. The 16 **PIONEERS** of them included both gardeners and botanists, such as 17 JOSEPH BANKS, who sponsored collectors out of his own pocket.

The seeds collected are often stored in seed banks. The most famous among them is known as the Millennium Seed Bank, where seeds are all stored in the 18 UNDERGROUND VAULTS at low temperature.

Questions 19-24

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

25. The reason to collect seeds is different from the past. = T
26. The Millennium Seed Bank is one of the earliest seed banks. = NG
27. A major reason for plant species extinction is farmland expansion. = T
28. The method scientists use to store seeds is similar to that used by farmers.
= T
29. Technological development is the only hope to save plant species. = F
30. The works of seed conservation are often limited by insufficient financial resources. = T

Questions 25-26

Choose TWO letters, A-E. Write the correct letters in boxes 25 and 26 on your answer sheet. Which TWO of the following are provided by plants to the human world?

- A food
- B artefact
- C treasure
- D energy
- E clothes

READING PASSAGE 3

Assessing the Risk

How do we judge whether it is right to go ahead with a new technology? Apply the precautionary principle properly and you won't go far wrong, says Colin Tudge.

Section 1

As a title for a supposedly unprejudiced debate on scientific progress, "Panic attack: interrogating our obsession with risk" did not bode well. Held last week at the Royal Institution in London, the event brought together scientists from across the world to ask why society is so obsessed with risk and to call for a "more rational" approach. "We seem to be organising society around the grandmotherly maxim of 'better safe than sorry,'" exclaimed *Spiked*, the online publication that organised the event. "What are the consequences of this overbearing concern with risks?"

Comment [KM107]: ANSWER 27 – T - The title of the debate is not unbiased

The debate was preceded by a survey of 40 scientists who were invited to describe how awful our lives would be if the "precautionary principle" had been allowed to prevail in the past. Their response was: no heart surgery or antibiotics, and hardly any drugs at all; no aeroplanes, bicycles or high-voltage power grids; no pasteurisation, pesticides or bio-technology; no quantum mechanics; no wheel; no "discovery" of America. In short, their message was: no risk, no gain.

Comment [KM108]: ANSWER 28 – NG - All the scientists invited to the debate were from the field of medicine

They have absolutely missed the point. The precautionary principle is a subtle idea. It has various forms, but all of them generally include some notion of cost-effectiveness. Thus the point is not simply to ban things that are not known to be absolutely safe. Rather, it says: "Of course you can make no progress without risk. But if there is no obvious gain from taking the risk, then don't take it."

Comment [KM109]: Answer 29 – F - The message those scientists who conducted the survey were sending was people shouldn't take risks.

Clearly, all the technologies listed by the 40 well-chosen savants were innately risky at their inception, as all technologies are. But all of them would have received the green light under the precautionary principle because they all had the potential to offer tremendous benefits — the solutions to very big problems — if only the snags could be overcome.

Comment [KM110]: Answer 30 – NG - All the listed technologies are riskier than other technologies

If the precautionary principle had been in place, the scientists tell us, we would not have antibiotics. But of course we would — if the version of the principle that sensible people now understand had been applied. When penicillin was discovered in the 1920s, infective bacteria were laying waste to the world. Children died from diphtheria and whooping cough, every open drain brought the threat of typhoid, and any wound could lead to septicaemia and even gangrene.

Penicillin was turned into a practical drug during the Second World War, when the many pestilences that result from war threatened to kill more people than the bombs. Of course antibiotics were a priority. Of course the risks, such as they could be perceived, were worth taking.

Comment [KM111]: Answer 31 – T - It is worth taking the risks to invent antibiotics

And so with the other items on the scientists' list: electric light bulbs, blood transfusions, CAT scans, knives, the measles vaccine — the precautionary principle would have prevented all of them, they tell us. But this is just plain wrong. If the precautionary principle had been applied properly, all these creations would have passed muster, because all offered incomparable advantages compared to the risks perceived at the time.

Comment [KM112]: Answer 32 – T- All the other inventions on the list were also judged by the precautionary principle

Section 2

Another issue is at stake here. Statistics are not the only concept people use when weighing up risk. Human beings, subtle and evolved creatures that we are, do not survive to threescore years and ten simply by thinking like pocket calculators. A crucial issue is **consumer's choice**. In deciding whether to pursue the development of a new technology, the consumer's right to choose should be considered alongside considerations of **risk and benefit**. Clearly, skiing is more dangerous than genetically modified tomatoes. But people who ski choose to do so; they do not have **skiing** thrust upon them by portentous experts of the kind who now feel they have the right to reconstruct our crops. Even with skiing, there is the matter of cost effectiveness to consider: skiing, I am told, is exhilarating. Where is the exhilaration in GM soya?

Comment [KM113]: Answer 33

Comment [KM114]: Answer 34

Comment [KM115]: Answer 35

Indeed, in contrast to all the other items on *Spiked's* list, **GM crops** stand out as an example of a technology whose benefits are far from clear. Some of the risks can at least be defined. But in the present economic climate, the benefits that might accrue from them seem dubious. Promoters of GM crops believe that the future population of the world cannot be fed without them. That is untrue. The crops that really matter are **wheat and rice**, and there is no GM research in the pipeline that will seriously affect the yield of either. GM is used to make **production** cheaper and hence more profitable, which is an extremely questionable ambition.

Comment [KM116]: Answer 36

Comment [KM117]: Answer 37

Comment [KM118]: Answer 38

The precautionary principle provides the world with a very important safeguard. If it had been in place in the past, it might, for example, have prevented insouciant miners from polluting major rivers with mercury. We have come to a sorry pass when scientists, who should above all be dispassionate scholars, feel they should misrepresent such a principle for the purposes of commercial and political propaganda. People at large continue to **mistrust** science and the high technologies

Comment [KM119]: Answer 39

it produces, partly because they doubt the wisdom of scientists. On such evidence as this, these doubts are fully justified.

Comment [KM120]: Answer 40 - People have the right to doubt science and technologies

Questions 27-32

Do the following statements agree with the information given in Reading Passage 3?

- | | |
|-----------|---|
| TRUE | <i>if the statement agrees with the information</i> |
| FALSE | <i>if the statement contradicts the information</i> |
| NOT GIVEN | <i>if there is no information on this</i> |

33. The title of the debate is not unbiased. = T
34. All the scientists invited to the debate were from the field of medicine. - NG
35. The message those scientists who conducted the survey were sending was people shouldn't take risks. - F
36. All the listed technologies are riskier than other technologies. - NG
37. It is worth taking the risks to invent antibiotics. - T
38. All the other inventions on the list were also judged by the precautionary principle. - T

Questions 33-39

Complete the summary below using **NO MORE THAN THREE WORDS** from the passage. Write your answers in boxes 33-39 on your answer sheet.

When applying precautionary principle to decide whether to invent a new technology, people should also take into consideration of the 33 **CONSUMER'S CHOICE** along with the usual consideration of 34 **RISK AND BENEFIT**. For example, though risky and dangerous enough, people still enjoy 35 **SKIING** for the excitement it provides. On the other hand, experts believe the future population desperately needs 36 **GM CROPS** inspite of their undefined risks. However, the researches conducted so far have not been directed towards increasing the yield of 37 **WHEAT AND RICE** but to reduce the cost of 38 **PRODUCTION** and to bring more profit out of it. In the end, such selfish use of precautionary principle for business and political gain has often led people to 39 **MISTRUST** science for they believe scientists are not to be trusted.

Question 40

Choose the correct letter, A, B, C or D. Write your answer in box 40 on your answer sheet.

What is the main theme of the passage?

- E. **People have the right to doubt science and technologies.**
- F. The precautionary principle could have prevented the development of science and technology.
- G. There are not enough people who truly understand the precautionary principle.
- H. The precautionary principle bids us to take risks at all costs.

Reading test 4**Passage 1 – spend 20 minutes****The Origins Of Laughter**

While joking and wit are uniquely human inventions, laughter certainly is not. Other creatures, including chimpanzees, gorillas and even rats, laugh. The fact that they laugh suggests that laughter has been around for a lot longer than we have.

There is no doubt that laughing typically involves groups of people. "Laughter evolved as a signal to others — it almost disappears when we are alone," says Robert **Provine**, a neuroscientist at the University of Maryland. **Provine** found that most laughter comes as a polite reaction to everyday remarks such as "see you later", rather than anything particularly funny. And the way we laugh depends on the company we're keeping. Men tend to laugh longer and harder when they are with other men, perhaps as a way of bonding. Women tend to laugh more and at a higher pitch when men are present, possibly indicating flirtation or even submission.

Comment [KM121]: Answer 6 – A - Laughter is a social activity

To find the origins of laughter, **Provine** believes we need to look at **play**. He points out that the masters of laughing are children, and nowhere is their talent more obvious than in the boisterous antics, and the original context is play. Well-known primate watchers, including Dian Fossey and Jane Goodall, have long argued that chimps laugh while at play. The sound they produce is known as a pant laugh. It seems obvious when you watch their behavior — they even have the same ticklish spots as we do. But after removing the context, the parallel between human laughter and a chimp's characteristic pant laugh is not so clear. When **Provine** played a tape of the pant laughs to 119 of his students, for example, only two guessed correctly what it was.

Comment [KM122]: Answer 4 – A - Most human laughter is not a response to a humorous situation

Comment [KM123]: Answer 11 – NG - Both men and women laugh more when they are with members of the same sex

Comment [KM124]: Answer 7 – E – Play - laughter first developed out of 7 **E - play**

These findings underline how chimp and human laughter vary. When we laugh the sound is usually produced by chopping up a single exhalation into a series of shorter with one sound produced on each inward and outward breath. The question is: does this pant laughter have the same source as our own laughter? New research lends weight to the idea that it does. The findings come from Elke **Zimmerman**, head of the Institute for Zoology in Germany, who compared the sounds made by babies and chimpanzees in response to tickling during the first year of their life. Using sound spectrographs to reveal the pitch and intensity of vocalizations, she discovered that chimp and human baby laughter follow broadly the same pattern. **Zimmerman** believes the closeness of baby laughter to chimp laughter supports the idea that laughter was around long before humans arrived on the scene. What

Comment [KM125]: Answer 8 – D – origins - human and chimp laughter may have the same **origins**

Comment [KM126]: Answer 1 – B - Babies and some animals produce laughter, which sounds similar.

Comment [KM127]: Answer 5 – B - Animal laughter evolved before human laughter

started simply as a modification of breathing associated with enjoyable and playful interactions has acquired a symbolic meaning as an indicator of pleasure.

Pinpointing when laughter developed is another matter. Humans and chimps share a common ancestor that lived perhaps 8 million years ago, but animals might have been laughing long before that. More distantly related primates, including gorillas, laugh, and anecdotal evidence suggests that other social mammals can do too. Scientists are currently testing such stories with a comparative analysis of just how common laughter is among animals. So far, though, the most compelling evidence for laughter beyond primates comes from research done by Jaak Panksepp from Bowling Green State University, Ohio, into the ultrasonic chirps produced by rats during play and in response to tickling.

Comment [KM128]: Answer 9 – G – primates -
Scientists have long been aware that 9 **primates** laugh

All this still doesn't answer the question of why we laugh at all. One idea is that laughter and tickling originated as a way of sealing the relationship between mother and child. Another is that the reflex response to tickling is protective, alerting us to the presence of crawling creatures that might harm us or compelling us to defend the parts of our bodies that are most vulnerable in hand-to-hand combat. But the idea that has gained the most popularity in recent years is that laughter in response to tickling is a way for two individuals to signal and test their trust in one another. This hypothesis starts from the observation that although a little tickle can be enjoyable, if it goes on too long it can be torture. By engaging in a bout of tickling, we put ourselves at the mercy of another individual, and laughing is what makes it a reliable signal of trust, according to Tom Flamson, a laughter researcher at the University of California, Los Angeles. "Even in rats, laughter, tickle, play and trust are linked. Rats chirp a lot when they play," says Flamson. "These chirps can be aroused by tickling. And they get bonded to us as a result, which certainly seems like a show of trust."

Comment [KM129]: Answer 2 – C - Primates are not
the only animals who produce laughter

We'll never know which animal laughed the first laugh, or why. But we can be sure it wasn't in response to a prehistoric joke. The funny thing is that while the origins of laughter are probably quite serious, we owe human laughter and our language-based humor to the same unique skill. While other animals pant, we alone can control our breath well enough to produce the sound of laughter. Without that control there would also be no speech — and no jokes to endure.

Comment [KM130]: Answer 10. H – confidence - it
seems that laughter may result from the 10 **H** we feel
with another person.

Comment [KM131]: Answer 3 – D - Laughter can be
used to show that we feel safe and secure with others

Comment [KM132]: Answer 13 – NG - Chimpanzees
produce laughter in a wider range of situations than rats
do.
No comparison is given

Comment [KM133]: Answer 12 - T - Primates lack
sufficient breath control to be able to produce laughs
the way humans do

Questions 1-6

Look at the following research findings (Questions 1-6) and the list of people below. Match each finding with the correct person, A, B, C or D. Write the correct letter, A, B, C or D, in boxes 1-6 on your answer sheet. NB You may use any letter more than once.

7. Babies and some animals produce laughter, which sounds similar. = B
8. Primates are not the only animals who produce laughter. = C
9. Laughter can be used to show that we feel safe and secure with others. = D
10. Most human laughter is not a response to a humorous situation. = A
11. Animal laughter evolved before human laughter. = B
12. Laughter is a social activity. = A

List of People

- E. Provine
- F. Zimmerman
- G. Panksepp
- H. Flamson

Questions 7-10

Complete the summary using the list of words, A-K, below. Write the correct letter, A-K, in boxes 7-10 on your answer sheet.

- | | | | | |
|-------------|-------------|---------------|------------|-----------|
| A. combat | B. chirps | C. pitch | D. origins | E. play |
| F. Rats | G. primates | H. confidence | I. fear | J. babies |
| K. tickling | | | | |

Some scientists believe that laughter first developed out of 7 E. Research has revealed that human and chimp laughter may have the same 8 D. Scientists have long been aware that 9 G laugh, but it now appears that laughter might be more widespread than once thought. Although the reasons why humans started to laugh are still unknown, it seems that laughter may result from the 10 H we feel with another person.

Questions 11-13

Do the following statements agree with the information given in Reading Passage 1? In boxes 11-13 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 |

21. Both men and women laugh more when they are with members of the same sex NG
22. Primates lack sufficient breath control to be able to produce laughs the way humans do. T
23. Chimpanzees produce laughter in a wider range of situations than rats do. NG

Passage 2 – spend 20 minutes**The Lost City**

Thanks to modern remote-sensing techniques, a ruined city in Turkey is slowly revealing itself as one of the greatest and most mysterious cities of the ancient world. Sally Palmer uncovers more.

A The low granite mountain, known as Kerkenes Dag, juts from the northern edge of the Cappadocian plain in Turkey. Sprawled over the mountainside are the ruins of an enormous city, contained by crumbling defensive walls seven kilometers long. Many respected archaeologists believe these are the remains of the fabled city of Pteria, the sixth-century BC stronghold of the Medes that the Greek historian Herodotus described in his famous work *The Histories*. The short-lived city came under Median control and only fifty years later was sacked, burned and its strong stone walls destroyed.

Comment [KM134]: Answer 17 – A - The reason why experts are interested in the site

B British archaeologist Dr Geoffrey Summers has spent ten years studying the site. Excavating the ruins is a challenge because of the vast area they cover. The 7 km perimeter walls run around a site covering 271 hectares. Dr Summers quickly realised it would take far too long to excavate the site using traditional techniques alone. So he decided to use modern technology as well to map the entire site, both above and beneath the surface, to locate the most interesting areas and priorities to start digging.

Comment [KM135]: ANSWER 14 – B - The reason for the deployment of a variety of investigative methods

C In 1993, Dr Summers hired a special hand-held balloon with a remote-controlled camera attached. He walked over the entire site holding the balloon and taking photos. Then one afternoon, he rented a hot-air balloon and floated over the site, taking yet more pictures. By the end of the 1994 season, Dr Summers and his team had a jigsaw of aerial photographs of the whole site. The next stage was to use remote sensing, which would let them work out what lay below the intriguing outlines and ruined walls. "Archaeology is a discipline that lends itself very well to remote sensing because it revolves around space," says Scott Branting, an associated director of the project. He started working with Dr Summers in 1995.

Comment [KM136]: Answer 18 – hot-air balloon

Comment [KM137]: Answer 16 – G - How the surface of the site was surveyed from above

D The project used two main remote-sensing techniques. The first is magnetometry, which works on the principle that magnetic fields at the surface of the Earth are influenced by what is buried beneath. It measures localised variations in the direction and intensity of this magnetic field. "The Earth's magnetic field can vary from place to place, depending on what happened there in the past says Branting. "If something containing iron oxide was heavily burnt, by natural or human actions, the iron particles in it can be permanently reoriented, like a compass needle, to align with the Earth's magnetic field present at that point in time and space." The magnetometer detects differences in the orientations and

Comment [KM138]: Answer 19

Comment [KM139]: Answer 20

intensities of these iron particles from the present-day magnetic field and uses them to produce an image of what lies below ground.

E Kerkenez Dag lends itself particularly well to magnetometry because it was all burnt once in a savage fire. In places the heat was sufficient to turn sandstone to glass and to melt granite. The fire was so hot that there were strong magnetic signatures set to the Earth's magnetic field from the time - around 547 BC - resulting in extremely clear pictures. Furthermore, the city was never rebuilt. "If you have multiple layers, it can confuse pictures, because you have different walls from different periods giving signatures that all go in different directions," says Branting. "We only have one going down about 1.5 meters, so we can get a good picture of this fairly short-lived city."

F The other main sub-surface mapping technique, which is still being used at the site, is resistivity. This technique measures the way electrical pulses are conducted through sub-surface soil. It's done by shooting pulses into the ground through a **thin metal probe**. Different materials have different electrical conductivity. For example, stone and **mudbrick** are poor conductors, but **looser, damp soil** conducts very well. By walking around the site and taking about four readings per metre, it is possible to get a detailed idea of what is where beneath the surface. The teams then build up pictures of walls, hearths and other remains. "It helps a lot if it has rained, because the electrical pulse can get through more easily," says Branting. "Then if something is more resistant, it really shows up." This is one of the reasons that the project has a **spring season**, when most of the resistivity work is done. Unfortunately, testing resistivity is a lot slower than magnetometry. "If we did resistivity over the whole site it would take about 100 years," says Branting. Consequently, the team is concentrating on areas where they want to **clarify** pictures from the magnetometry.

Comment [KM140]: Answer 21

Comment [KM141]: Answer 22

Comment [KM142]: Answer 23

Comment [KM143]: Answer 24

Comment [KM144]: Answer 25

Comment [KM145]: Answer 26 - **They pinpoint key areas, which would be worth investigating closely**

Comment [KM146]: Answer 15 - An example of an unexpected find

G **Remote sensing does not reveal everything about Kerkenez Dag, but it shows the most interesting sub-surface areas of the site.** The archaeologists can then excavate these using traditional techniques. **One surprise came when they dug out one of the gates in the defensive walls.** "Our observations in early seasons led us to assume that we were looking at a stone base from a mudbrick city wall, such as would be found at most other cities in the Ancient Near East," says Dr Summers. "When we started to excavate we were staggered to discover that the walls were made entirely from stone and that the gate would have stood at least ten metres high. After ten years of study, Pteria is gradually giving up its secrets."

Questions 14-17

Which paragraph contains the following information? Write the correct letter, A-G, in boxes 14-17 on your answer sheet.

- 18 The reason for the deployment of a variety of investigative methods - B
- 19 An example of an unexpected find - G
- 20 How the surface of the site was surveyed from above - C
- 21 The reason why experts are interested in the site - A

Questions 18-25

Complete the summary below. Choose **NO MORE THAN THREE WORDS** from the passage for each answer. Write your answers in boxes 18-25 on your answer sheet.

Exploring the ancient city of Pteria

Archaeologists began working ten years ago. They started by taking photographs of the site from the ground and then from a distance in a 18 **HOT-AIR BALLOON**. They focused on what lay below the surface using a magnetometer, which identifies variations in the magnetic field. These variations occur when the 19 **IRON PARTICLES** in buried structures have changed direction as a result of great heat. They line up with the surrounding magnetic field just as a 20 **COMPASS (NEEDLE)** would do.

The other remote-sensing technique employed was resistivity. This uses a 21 **THIN METAL PROBE** to fire electrical pulses into the earth. The principle is that building materials like 22 **MUDBRICK** and stone do not conduct electricity well, while 23 **LOOSER DAMP SOIL** does this much more effectively. This technique is mainly employed during the 24 **SPRING SEASON** when conditions are more favourable. Resistivity is mainly being used to 25 **CLARIFY** some images generated by the magnetometer.

Question 26 Choose the correct letter, A, B, C or D. Write the correct letter in box 26 on your answer sheet. How do modern remote-sensing techniques help at the Pteria site?

- A They detect minute buried objects for the archaeologists to dig up.
- B **They pinpoint key areas, which would be worth investigating closely.**
- C They remove the need for archaeologists to excavate any part of the site.
- D They extend the research period as they can be used at any time of year.

Passage 3 – spend 20 minutes**Designed to Last:****Could Better Design Cure Our Throwaway Culture?**

Jonathan Chapman, a senior lecturer at the University of Brighton, UK, is one of a new breed of 'sustainable designers'. Like many of us, they are concerned about the huge waste associated with Western consumer culture and the damage this does to the environment. Some, like Chapman, aim to create objects we will want to keep rather than discard. Others are working to create more efficient or durable consumer goods, or goods designed with recycling in mind. The waste entailed in our fleeting relationships with consumer durables is colossal.

Domestic power tools, such as electric drills, are a typical example of such waste.

However much DIY the purchaser plans to do, the truth is that these things are thrown away having been used, on average, for just ten minutes. Most will serve 'conscience time', gathering dust on a shelf in the garage; people are reluctant to admit that they have wasted their money. However, the end is inevitable: thousands of years in landfill waste sites. In its design, manufacture, packaging, transportation and disposal, a power tool consumes many times its own weight of resources, all for a shorter active lifespan than that of the average small insect.

Comment [KM147]: Answer 32 – T - People often buy goods that they make little use of

Comment [KM148]: Answer 27 – D - would feel guilty if they threw the tool away immediately

To understand why we have become so wasteful, we should look to the underlying motivation of consumers. "People own things to give expression to who they are, and to show what group of people they feel they belong to," Chapman says. In a world of mass production, however, that symbolism has lost much of its potency. For most of human history, people had an intimate relationship with objects they used or treasured. Often they made the objects themselves, or family members passed them on. For more specialised objects, people relied on expert manufacturers living close by, whom they probably knew personally. Chapman points out that all these factors gave objects a history — a narrative — and an emotional connection that today's mass-produced goods cannot possibly match. Without these personal connections, consumerist culture idolizes novelty instead. People know that they cannot buy happiness, but the chance to remake themselves with glossy, box-fresh products seems irresistible. When the novelty fades, they simply renew the excitement by buying more.

Comment [KM149]: Answer 33 – T - Understanding the reasons for buying goods will help to explain why waste occurs.

Comment [KM150]: Answer 29 – B - less likely to be kept for a long time

Comment [KM151]: A. Answer 28 – B - was aware of how the item had come into being.

Comment [KM152]: Answer 30 – D - a desire to purchase a constant stream of new items

Chapman's solution is what he calls 'emotionally durable design'. He says the challenge for designers is to create things we want to keep. This may sound like a tall order but it can be surprisingly straightforward. A favorite pair of old jeans, for example, just do not have the right feel until they have been worn and washed a hundred times. It is as if

they are sharing the wearer's life story. The look can be faked, but it is simply not the same. Walter Stahel, visiting professor at the University of Surrey, UK, calls this 'the teddy bear factor'. No matter how ragged and worn a favorite teddy becomes, we don't rush out and buy another one. As adults, our teddy bear connects us to our childhood and this protects it from obsolescence. Stahel argues that this is what sustainable design needs to do with more products.

Comment [KM153]: Answer 31 – C - are valued more as they grow older

The information age was supposed to lighten our economies and reduce our impact on the environment, but, in fact, the reverse seems to be happening. We have simply added information technology to the industrial era and speeded up the developed world's metabolism. The cure is hardly rocket science: minimize waste, stop moving things around so much and use people more. So what will post-throwaway consumerism look like? It might be as simple as installing energy-saving light bulbs, more efficient washing machines or choosing locally produced groceries with less packaging. In general, we will spend less on goods and more on services. Instead of buying a second car, for example, we might buy into a car-sharing network. Rather than following our current wasteful practices, we will buy less and rent a lot more; why own things such as tools that you use infrequently, especially things are likely to be updated all the time?

Comment [KM154]: Answer 36 laundry is washing clothes

Comment [KM155]: Answer 37 – buy food that is not moved across long distance

Comment [KM156]: Answer 38 – cars – could be sared

Consumer durables will increasingly be sold with plans for their disposal. Electronic goods such as mobile phones will be designed to be recyclable, with the extra cost added into the retail price. Following Chapman's notion of emotionally durable design, there will be a move away from mass production and towards tailor-made articles and products designed and manufactured with greater craftsmanship, products which will be repaired rather than replaced, in the same way as was done in our grandparents' time. Companies will replace profit from bulk sales by servicing and repairing products chosen because we want them to last.

Comment [KM157]: Answer 34 – NG - People already rent more goods than they buy – It is talked about renting in the future, but whether people have already started doing this is unclear

Comment [KM158]: Answer 39 – tools could be rented

Comment [KM159]: Answer 40 – mobile phones

Chapman acknowledges that it will be a challenge to persuade people to buy fewer goods, and ones that they intend to keep. At the moment, price competition between retailers makes it cheaper for consumers to replace rather than repair.

Comment [KM160]: Answer 35 – NG - Companies will charge less to repair goods in the future – No info on charging is given

Products designed to be durable and emotionally satisfying are likely to be more expensive, so how will we be persuaded to choose sustainability? Tim Cooper, from Sheffield Hallam University in the UK, points out that many people are already happy to pay a premium for quality, and that they also tend to value and care more for expensive goods. Chapman is also positive: "People are ready to keep things for longer," he says, "The problem is that a lot of industries don't know how to do that." Chapman believes

that sustainable design is here to stay. "The days when large corporations were in a position to choose whether to jump on the sustainability band-wagon or not are coming to an end," he says. Whether this is also the beginning of the end of the throwaway society remains to be

Questions 27-31

Choose the correct letter, A, B, C or D. Write the correct letter in boxes 27-31 on your answer sheet.

- 27 In the second paragraph, the expression 'conscience time' refers to the fact that the owners
- E. wish they had not bought the power tool.
 - F. want to make sure the tool is stored safely.
 - G. feel that the tool will increase in value in the future.
 - H. **would feel guilty if they threw the tool away immediately.**
- 28 Jonathan Chapman uses the word 'narrative' in the third paragraph to refer to the fact that the owner
- E. told a story about how the item was bought.
 - F. **was aware of how the item had come into being.**
 - G. felt that the item became more useful over time.
 - H. was told that the item had been used for a long time.
- 29 In the third paragraph, the writer suggests that mass-produced goods are
- E. inferior in quality.
 - F. **less likely to be kept for a long time.**
 - G. attractive because of their lower prices.
 - H. less tempting than goods which are traditionally produced.
- 30 Lack of personal connection to goods is described as producing
- E. a belief that older goods are superior.
 - F. an attraction to well-designed packaging.
 - G. a desire to demonstrate status through belongings.
 - H. **a desire to purchase a constant stream of new items.**
- 31 Jeans and teddy bears are given as examples of goods which
- E. have been very well designed.
 - F. take a long time to show wear.
 - G. **are valued more as they grow older.**
 - H. are used by the majority of the population.

Questions 32-35

Do the following statements agree with the views of the writer in reading Passage 3?

In boxes 32-35 on your answer sheet, write

TRUE if the statement agrees with the views of the writer

FALSE if the statement contradicts the views of the writer

NOT GIVEN if it is impossible to say what the writer thinks about this

36 People often buy goods that they make little use of. = T

37 Understanding the reasons for buying goods will help to explain why waste occurs. = T

38 People already rent more goods than they buy. = NG

39 Companies will charge less to repair goods in the future. = NG

Questions 36-40

Complete the summary using the list of words, A-I, below. Write the correct letter, A-I, in boxes 36-40 on your answer sheet.

A cure for our wasteful habits

The writer believes that the recipe for reducing our impact on the environment is a simple one. He states that we should use less energy for things such as lighting or 36 D and buy 37 F that will not need to be moved across long distances.

Some expensive items such as 38 H could be shared, and others which may be less expensive but which are not needed often, such as 39 C could be rented instead of being purchased. He believes that manufacturers will need to design high-technology items such as 40 A, so that they can be recycled more easily.

- | | | | | |
|------------------|-------------|----------|----------------|--------------|
| A. mobile phones | B. clothing | C. tools | D. laundry | E. computers |
| F. food | G. heating | H. cars | I. teddy bears | |

Exam reading test 5**Reading passage 1 – Spend 20 minutes****Alfred Nobel**

Since 1901, the Nobel Prize has been honoring men and women from all corners of the globe for outstanding achievements in physics, chemistry, medicine, literature, and for work in peace. The foundations for the prize were laid in 1895 when Alfred Nobel wrote his last will, leaving much of his wealth to the establishment of the Nobel Prize.

Comment [KM161]: Answer 1 – F - The first Nobel Prize was awarded in 1895

Alfred Nobel was born in Stockholm on October 21, 1833. His father Immanuel Nobel was an engineer and inventor who built bridges and buildings in Stockholm. In connection with his construction work Immanuel Nobel also experimented with different techniques for blasting rocks. Successful in his industrial and business ventures, Immanuel Nobel was able, in 1842, to bring his family to St. Petersburg. There, his sons were given a first class education by private teachers. The training included natural sciences, languages and literature. By the age of 17 Alfred Nobel was fluent in Swedish, Russian, French, English and German. His primary interests were in English literature and poetry as well as in chemistry and physics. Alfred's father, who wanted his sons to join his enterprise as engineers, disliked Alfred's interest in poetry and found his son rather introverted.

Comment [KM162]: Answer 2 – NG - Nobel's father wanted his son to have better education than what he had had

In order to widen Alfred's horizons his father sent him abroad for further training in **chemical engineering**. During a two-year period Alfred Nobel visited Sweden, Germany, France and the United States. In Paris, the city he came to like best, he worked in the private laboratory of Professor T. J. Pclouze, a famous chemist. There he met the young Italian chemist **Ascanio Sobrero** who, three years earlier, had invented nitroglycerine, a highly explosive liquid. But it was considered too dangerous to be of any practical use. Although its explosive power greatly exceeded that of **gunpowder**, the liquid would explode in a very unpredictable manner if subjected to heat and pressure. Alfred Nobel became very interested in nitroglycerine and how it could be put to practical use in construction work. He also realized that the safety problems had to be solved and a method had to be developed for the controlled detonation of nitroglycerine.

Comment [KM163]: ANSWER 7

Comment [KM164]: ANSWER 8

Comment [KM165]: ANSWER 9

After his return to Sweden in 1863, Alfred Nobel concentrated on developing nitroglycerine as an explosive. Several explosions, including one (1864) in which his brother Emil and several other persons were killed, convinced the authorities that nitroglycerine production was exceedingly dangerous. They forbade further experimentation with nitroglycerine within the **Stockholm** city limits and Alfred

Comment [KM166]: ANSWER 10

Nobel had to move his experimentation to a barge anchored on Lake Malaren. Alfred was not discouraged and in 1864 he was able to start mass production of nitroglycerine. To make the handling of nitroglycerine safer Alfred Nobel experimented with different additives. He soon found that mixing nitroglycerine with kieselguhr would turn the liquid into a paste, which could be shaped into rods of a size and form suitable for insertion into drilling holes. In 1867 he patented this material under the name of dynamite. To be able to detonate the dynamite rods he also invented a **detonator** (blasting cap) which could be ignited by lighting a fuse. These inventions were made at the same time as the **pneumatic drill** came into general use. Together these inventions drastically reduced the **cost** of blasting rock, drilling tunnels, building canals and many other forms of construction work.

Comment [KM167]: ANSWER 11

Comment [KM168]: ANSWER 12

Comment [KM169]: ANSWER 13

The market for dynamite and detonating caps grew very rapidly and Alfred Nobel also proved himself to be a very skillful entrepreneur and businessman. Over the years he founded factories and laboratories in some 90 different places in more than 20 countries. Although he lived in Paris much of his life he was constantly traveling. When he was not traveling or engaging in business activities Nobel himself worked intensively in his various laboratories, first in Stockholm and later in other places. He focused on the development of explosives technology as well as other chemical inventions including such materials as synthetic rubber and leather, artificial silk, etc. By the time of his death in 1896 he had 355 patents.

Comment [KM170]: ANSWER 3 – F - Nobel was an unsuccessful businessman

Intensive work and travel did not leave much time for a private life. At the age of 43 he was feeling like an old man. At this time he advertised in a newspaper "wealthy, highly-educated elderly gentleman seeks lady of mature age, versed in languages, as secretary and supervisor of household." The most qualified applicant turned out to be an Austrian woman, Countess Bertha Kinsky. After working a very short time for Nobel she decided to return to Austria to marry Count Arthur von Suttner. In spite of this Alfred Nobel and Bertha von Suttner remained friends and kept writing letters to each other for decades. Over the years Bertha von Suttner became increasingly critical of the arms race. She wrote a famous book, *Lay Down Your Arms* and became a prominent figure in the peace movement. No doubt this influenced Alfred Nobel when he wrote his final will, which was to include a Prize for persons or organizations who promoted peace. Several years after the death of Alfred Nobel, the Norwegian Storting (Parliament) decided to award the 1905 Nobel Peace Prize to Bertha von Suttner.

Comment [KM171]: ANSWER 4 – F - Bertha von Suttner was selected by Nobel himself for the first peace prize

Alfred Nobel died in San Remo, Italy, on December 10, 1896. When his will was opened it came as a surprise that his fortune was to be used for Prizes in Physics, Chemistry, Physiology or Medicine, Literature and Peace. The executors of his will

were two young engineers, Ragnar Sohlman and Rudolf Lilljequist. They set about forming the Nobel Foundation as an organization to take care of the financial assets left by Nobel for this purpose and to coordinate the work of the Prize-Awarding Institutions. This was not without its difficulties since the will was contested by relatives and questioned by authorities in various countries.

Comment [KM172]: ANSWER 5 – T - The Nobel Foundation was established after the death of Nobel

Alfred Nobel's greatness lay in his ability to combine the penetrating mind of the scientist and inventor with the forward-looking dynamism of the industrialist. Nobel was very interested in social and peace-related issues and held what were considered radical views in his era. He had a great interest in literature and wrote his own poetry and dramatic works. The Nobel Prizes became an extension and a fulfillment of his lifetime interests.

Comment [KM173]: ANSWER 6 – T - Nobel's social involvement was uncommon in the 1800's

Questions 1-6

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

- 7 The first Nobel Prize was awarded in 1895. = F
- 8 Nobel's father wanted his son to have better education than what he had had.=NG
- 9 Nobel was an unsuccessful businessman.=F
- 10 Bertha von Suttner was selected by Nobel himself for the first peace prize.=F
- 11 The Nobel Foundation was established after the death of Nobel=T
- 12 Nobel's social involvement was uncommon in the 1800's.=T

Questions 7-13

Complete the notes below using **NO MORE THAN TWO WORDS** from the passage. Write your answers in boxes 7-13 on your answer sheet.

Education:

Having accumulated a great fortune in his business, Nobel's father determined to give his son the best education and sent him abroad to be trained in 7CHEMICAL ENGINEERING during Nobel's study in Paris, he worked in a private laboratory, where he came in contact with a young engineer 8 ASCANIO SOBRERO and his invention nitroglycerine, a more powerful explosive than 9 GUNPOWDER

Benefits in construction works:

Nobel became really interested in this new explosive and experimented on it. But nitroglycerine was too dangerous and was banned for experiments within the city of 10 STOCKHOLM So Nobel had to move his experiments to a lake. To make nitroglycerine easily usable, Nobel invented dynamite along with 11 PNEUMATIC DRILL while in the meantime 12 DETONATOR became popular, all of which dramatically lowered the 13COST of construction works.

READING PASSAGE 2*Spend about 20 minutes***Questions 14-20**

Reading passage 2 has seven paragraphs, A-G. Choose the correct heading for each paragraph from the list of headings below. Write the correct number, i-x, in boxes 14-20 on your answer sheet.

List of headings

- xi. The best moment to migrate
- xii. The unexplained rejection of closer feeding ground
- xiii. The influence of weather on the migration route
- xiv. Physical characteristics that allow birds to migrate
- xv. The main reason why birds migrate
- xvi. The best wintering grounds for birds
- xvii. Research findings on how birds migrate
- xviii. Successful migration despite trouble of wind
- xix. Contrast between long-distance migration and short-distance migration
- xx. Mysterious migration despite lack of teaching

21 Paragraph A= iv

22 Paragraph B = v

23 Paragraph C = ii

24 Paragraph D = x

25 Paragraph E = vii

26 Paragraph F = i

27 Paragraph G =viii

BIRD MIGRATION

H. Birds have many unique design features that enable them to perform such amazing feats of endurance. They are equipped with lightweight, hollow bones, intricately designed feathers providing both lift and thrust for rapid flight, navigation systems superior to any that man has developed, and an ingenious heat conserving design that, among other things, concentrates all blood circulation beneath layers of warm, waterproof plumage, leaving them fit to face life in the harshest of climates. Their respiratory systems have to perform efficiently during sustained flights at altitude, so they have a system of extracting oxygen from their lungs that far exceeds that of any other animal. During the later stages of the summer breeding season, when food is plentiful, their bodies are able to accumulate considerable layers of fat, in order to provide sufficient energy for their long migratory flights.

I. The fundamental reason that birds migrate is to find adequate food during the winter months when it is in short supply. This particularly applies to birds that breed in the temperate and Arctic regions of the Northern Hemisphere, where

Comment [KM174]: ANSWER 14 – IV - Physical characteristics that allow birds to migrate

Comment [KM175]: i.ANSWER 15 – V -The main reason why birds migrate

food is abundant during the short growing season. Many species can tolerate cold temperatures if food is plentiful, but when food is not available they must migrate. However, intriguing questions remain.

- J. One puzzling fact is that many birds journey much further than would be necessary just to find food and good weather. Nobody knows, for instance, why British swallows, which could presumably survive equally well if they spent the winter in equatorial Africa, instead fly several thousands of miles further to their preferred winter home in South Africa's Cape Province. Another mystery involves the huge migrations performed by arctic terns and mudflat-feeding shorebirds that breed close to Polar Regions. In general, the further north a migrant species breeds, the further south it spends the winter. For arctic terns this necessitates an annual round trip of 25,000 miles. Yet, en route to their final destination in far-flung southern latitudes, all these individuals overfly other areas of seemingly suitable habitat spanning two hemispheres. While we may not fully understand birds' reasons for going to particular places, we can marvel at their feats.

Comment [KM176]: ANSWER 16 – II - The unexplained rejection of closer feeding ground

- K. One of the greatest mysteries is how young birds know how to find the traditional wintering areas without **parental guidance**. Very few adults migrate with juveniles in tow, and youngsters may even have little or no inkling of their parents' appearance. A familiar example is that of the cuckoo, which lays its eggs in another species' nest and never encounters its young again. It is mind boggling to consider that, once raised by its host species, the young cuckoo makes its own way to ancestral wintering grounds in the tropics before returning single-handedly to northern Europe the next season to seek out a mate among its own kind. The obvious implication is that it inherits from its parents an inbuilt route map and direction-finding capability, as well as a mental image of what another cuckoo looks like. Yet nobody has the slightest idea as to how this is possible.

Comment [KM177]: ANSWER 17 – X -Mysterious migration despite lack of teaching

Comment [KM178]: ANSWER 23

- L. Mounting evidence has confirmed that birds use the positions of the sun and stars to obtain compass directions. They seem also to be able to detect the earth's magnetic field, probably due to having minute crystals of magnetite in the region of their brains. However, true navigation also requires an awareness of position and time, especially when lost. Experiments have shown that after being taken thousands of miles over an unfamiliar landmass, birds are still capable of returning rapidly to nest sites. Such phenomenal powers are the product of computing a number of sophisticated cues, including an inborn map of the night sky and the pull of the earth's magnetic field. How the birds use their 'instruments' remains unknown, but one thing is clear: they see the world with a superior sensory perception to ours. Most small birds migrate at night and take their direction from the position of the setting sun. However, as well as seeing the sun go down, they also seem to see the plane of polarized light caused by it,

Comment [KM179]: ANSWER 18 – VII - Research findings on how birds migrate

Comment [KM180]: ANSWER 20 – A - Birds often fly further than they need to

which calibrates their **compass**. Traveling at night provides other benefits. Daytime **predators** are avoided and the danger of dehydration due to flying for long periods in warm, sunlit skies is reduced. Furthermore, at night the air is generally cool and less turbulent and so conducive to sustained, stable flight.

Comment [KM181]: ANSWER 24

Comment [KM182]: ANSWER 25

Comment [KM183]: ANSWER 22 – C - Birds flying at night need less water

M. _____ Nevertheless, all journeys involve considerable risk, and part of the skill in arriving safely is setting off at the right time. This means accurate weather forecasting, and utilizing favorable winds. Birds are adept at both, and, in laboratory tests, some have been shown to detect the minute difference in barometric pressure between the floor and ceiling of a room. Often birds react to weather changes before there is any **visible** sign of them. Lapwings, which feed on grassland, flee west from the Netherlands to the British Isles, France and Spain at the onset of a cold snap. When the ground surface freezes the birds could starve. Yet they return to Holland ahead of a thaw, their arrival linked to a pressure change presaging an improvement in the weather.

Comment [KM184]: i.ANSWER 19 – I - The best moment to migrate

N. In one instance a Welsh Manx shearwater carried to America and released was back in its burrow on Skokholm Island, off the Pembrokeshire coast, one day before a letter announcing its release! Conversely, each autumn a small number of North American birds are blown across the Atlantic by fast-moving westerly tail winds. Not only do they arrive safely in Europe, but, based on ringing evidence, some make it back to North America the following spring, after probably spending the winter with European migrants in sunny African climes.

Comment [KM185]: ANSWER 26

Questions 21-22

Choose **TWO** letters, A-E. Write the correct letters in your answer sheet.

Which **TWO** of the following statements are true of bird migration?

- F. **Birds often fly further than they need to.**
- G. Birds traveling in family groups are safe.
- H. **Birds flying at night need less water.**
- I. Birds have much sharper eye-sight than humans.
- J. Only shorebirds are resistant to strong winds.

Comment [KM186]: ii.ANSWER 20 – VIII - Successful migration despite trouble of wind

Question 23-26

Complete the sentences below using **NO MORE THAN ONE WORD OR NUMBER** from the passage. Write your answers in your answer sheet.

27 It is a great mystery that young birds like cuckoos can find their wintering grounds without **PARENTAL GUIDANCE**

28 Evidence shows birds can tell directions like a **COMPASS** by observing the sun and the stars.

29 One advantage for birds flying at night is that they can avoid contact with **PREDATORS**

30 Laboratory tests show that birds can detect weather without **VISIBLE** signs.

READING PASSAGE 3

Spend about 20 minutes

The Ingenuity Gap

Ingenuity, as I define it here, consists not only of ideas for new technologies like computers or drought-resistant crops but, more fundamentally, of ideas for better institutions and social arrangements, like efficient markets and competent governments.

Comment [KM187]: ANSWER 27 – C - The definition of ingenuity - is not only of technological advance, but more of institutional renovation.

How much and what kinds of ingenuity a society requires depends on a range of factors, including the society's goals and the circumstances within which it must achieve those goals—whether it has a young population or an aging one, an abundance of natural resources or a scarcity of them, an easy climate or a punishing one, whatever the case may be.

Comment [KM188]: ANSWER 28 – A - The requirement for ingenuity - depends on many factors including climate

How much and what kinds of ingenuity a society supplies also depends on many factors, such as the nature of human inventiveness and understanding, the rewards an economy gives to the producers of useful knowledge, and the strength of political opposition to social and institutional reforms.

A good supply of the right kind of ingenuity is essential, but it isn't, of course, enough by itself. We know that the creation of wealth, for example, depends not only on an adequate supply of useful ideas but also on the availability of other, more conventional factors of production, like capital and labor. Similarly, prosperity, stability and justice usually depend on the resolution, or at least the containment, of major political struggles over wealth and power. Yet within our economies ingenuity often supplants labor, and growth in the stock of physical plant is usually accompanied by growth in the stock of ingenuity. And in our political systems, we need great ingenuity to set up institutions that successfully manage struggles over wealth and power. Clearly, our economic and political processes are intimately entangled with the production and use of ingenuity.

Comment [KM189]: Answer 29 D - The creation of social wealth also depends on the availability of some traditional resources

Comment [KM190]: Answer 30 – B - The stability of society depends on the management and solution of disputes

The past century's countless incremental changes in our societies around the planet, in our technologies and our interactions with our surrounding natural environments, have accumulated to create a qualitatively new world. Because these changes have accumulated slowly, it's often hard for us to recognize how profound and sweeping they've been. They include far larger and denser populations; much higher per capita consumption of natural resources; and far better and more widely available technologies for the movement of people, materials, and especially information.

Comment [KM191]: Answer 31 – B - What does the author say about the incremental change of the last 100 years - Its significance is often not noticed.

In combination, these changes have sharply increased the density, intensity, and pace of our interactions with each other; they have greatly increased the burden we place on our natural environment; and they have helped shift power from national and international institutions to individuals and subgroups, such as political special interests and ethnic factions.

Comment [KM192]: Answer 32 – B - The combination of changes has made life - faster

As a result, people in all walks of life—from our political and business leaders to all of us in our day-to-day—must cope with much more complex, urgent, and often unpredictable circumstances. The management of our relationship with this new world requires immense and ever-increasing amounts of social and technical ingenuity. As we strive to maintain or increase our prosperity and improve the quality of our lives, we must make far more sophisticated decisions, and in less time, than ever before.

When we enhance the performance of any system, from our cars to the planet's network of financial institutions, we tend to make it more complex. Many of the natural systems critical to our well-being, like the global climate and the oceans, are extraordinarily complex to begin with. We often can't predict or manage the behavior of complex systems with much precision, because they are often very sensitive to the smallest of changes and perturbations, and their behavior can flip from one mode to another suddenly and dramatically. In general, as the human-made and natural systems we depend upon become more complex, and as our demands on them increase, the institutions and technologies we use to manage them must become more complex too, which further boosts our need for ingenuity.

Comment [KM193]: Answer 33 – C - What does the author say about the natural systems - Minor alterations may cause natural systems to change dramatically

The good news, though, is that the last century's stunning changes in our societies and technologies have not just increased our need for ingenuity; they have also produced a huge increase in its supply. The growth and urbanization of human populations have combined with astonishing new communication and transportation technologies to expand interactions among people and produce larger, more integrated, and more efficient markets. These changes have, in turn, vastly accelerated the generation and delivery of useful ideas.

Comment [KM194]: Answer 34 – T - The demand for ingenuity has been growing during the past 100 years

But—and this is the critical "but"—we should not jump to the conclusion that the supply of ingenuity always increases in lockstep with our ingenuity requirement: while it's true that necessity is often the mother of invention, we can't always rely on the right kind of ingenuity appearing when and where we need it. In many cases, the complexity and speed of operation of today's vital economic, social, and ecological systems exceed the human brain's grasp. Very few of us have more than a rudimentary understanding of how these systems work. They remain fraught with

Comment [KM195]: Answer 36 – T - There are very few who can understand the complex systems of the present world

countless "unknown unknowns," which makes it hard to supply the ingenuity we need to solve problems associated with these systems.

Comment [KM196]: Answer 35 – T - The ingenuity we have may be inappropriate for solving problems at hand

In this book, I explore a wide range of other factors that will limit our ability to supply the ingenuity required in the coming century. For example, many people believe that new communication technologies strengthen democracy and will make it easier to find solutions to our societies' collective problems, but the story is less clear than it seems. The crush of information in our everyday lives is shortening our attention span, limiting the time we have to reflect on critical matters of public policy, and making policy arguments more superficial.

Comment [KM197]: Answer 37 – F - More information will help us to make better decisions

Modern markets and science are an important part of the story of how we supply ingenuity. Markets are critically important, because they give entrepreneurs an incentive to produce knowledge. As for science, although it seems to face no theoretical limits, at least in the foreseeable future, practical constraints often slow its progress. The cost of scientific research tends to increase as it delves deeper into nature. And science's rate of advance depends on the characteristic of the natural phenomena it investigates, simply because some phenomena are intrinsically harder to understand than others, so the production of useful new knowledge in these areas can be very slow. Consequently, there is often a critical time lag between the recognition between a problem and the delivery of sufficient ingenuity, in the form of technologies, to solve that problem. Progress in the social sciences is especially slow, for reasons we don't yet understand; but we desperately need better social scientific knowledge to build the sophisticated institutions today's world demands.

Comment [KM198]: Answer 39 – T - Science tends to develop faster in certain areas than others

Comment [KM199]: Answer 40 – F - Social science develops especially slowly because it is not as important as natural science

Questions 27-30

Complete each sentence with the appropriate answer, A, B, C, or D. Write the correct answer in boxes 27-30 on your answer sheet.

- 31 The definition of ingenuity = C
 - 32 The requirement for ingenuity = A
 - 33 The creation of social wealth = D
 - 34 The stability of society = B
- A depends on many factors including climate.
 B depends on the management and solution of disputes.
 C is not only of technological advance, but more of institutional renovation.
 D also depends on the availability of some traditional resources.

Questions 31-33

Choose the correct letter, A, B, C or D. Write your answers in boxes 31-33 on your answer sheet.

31. What does the author say about the incremental change of the last 100 years?
- A It has become a hot scholastic discussion among environmentalists.
 - B **Its significance is often not noticed.**
 - C It has reshaped the natural environments we live in.
 - D It benefited a much larger population than ever.
32. The combination of changes has made life:
- A easier
 - B **faster**
 - C slower
 - D less sophisticated
33. What does the author say about the natural systems?
- A New technologies are being developed to predict change with precision.
 - B Natural systems are often more sophisticated than other systems.
 - C **Minor alterations may cause natural systems to change dramatically.**
 - D Technological developments have rendered human being more independent of natural systems.

Questions 34-40

Do the following statements agree with the information given in Reading Passage 3?

In boxes 34-40 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

- 41 The demand for ingenuity has been growing during the past 100 years. =T
- 42 The ingenuity we have may be inappropriate for solving problems at hand. =T
- 43 There are very few who can understand the complex systems of the present world.=T
- 44 More information will help us to make better decisions. = F
- 45 The next generation will blame the current government for their conduct. = NG
- 46 Science tends to develop faster in certain areas than others. = T
- 47 Social science develops especially slowly because it is not as important as natural science. = F

Comment [KM200]: Answer 38 – NG – Nothing is given about next generations comments

Exam reading test 6**Reading passage 1 – Spend 20 minutes****Man or Machine**

MIT's humanoid robots showcase both human creativity and contemporary pessimism.

Humanoid robots were once the stuff of political and science fiction. Today, scientists working in Japan and the USA have been turning fiction into a physical reality.

- H. During July 2003, the Museum of Science in Cambridge, Massachusetts exhibited what Honda calls 'the world's most advanced humanoid robot', ASIMO (the Advanced Step in Innovative Mobility). Honda's brainchild is on tour in North America and delighting audiences wherever it goes. After **17 years** in the making, ASIMO stands at four feet tall, weighs around 115 pounds and bob like a child in an astronaut's suit. Though it is difficult to see ASIMO's face at a distance, on closer inspection it has a smile and two large 'eyes' that conceal cameras. The robot cannot work autonomously — its actions are 'remote controlled' by scientists through the computer in its **backpack**. Yet watching ASIMO perform at a show in Massachusetts it seemed uncannily human. The audience cheered as ASIMO walked forwards and backwards, side to side and up and downstairs. **It can even dance to the Hawaiian Hula.**
- I. While the Japanese have made huge strides in solving some of the engineering problems of human kinetics and bipedal movements, for the past 10 years scientists at MIT's former Artificial Intelligence (AI) lab (recently renamed the Computer Science and Artificial Intelligence Laboratory, CSAIL) have been making robots that can behave like humans and **interact** with humans. One of MIT's robots, Kismet, is an anthropomorphic head and has two eyes (complete with eyelids), ears, a mouth, and eyebrows. It has several **facial expressions**, including happy, sad, frightened and disgusted. Human interlocutors are able to read some of the robot's facial expressions, and often change their behaviour towards the machine as a result - for example, playing with it when it appears 'sad'. Kismet is now in MIT's museum, but the ideas developed here continue to be explored in new robots.
- J. **Cog** (short for Cognition) is another pioneering project from MIT's former AI lab. Cog has a head, eyes, two arms, hands and a torso — and its proportions were originally measured from the body of a researcher in the lab. The work on Cog has been used to test theories of embodiment and developmental robotics, particularly getting a robot to develop **intelligence** by responding to its environment via sensors, and to learn through these types of interactions. This approach to AI was thought up and developed by a team of students and researchers led by the head of MIT's former AI lab, Rodney Brooks (now head of CSAIL), and represented a completely new development.
- K. This work at MIT is getting furthest down the road to creating human-like and interactive robots. Some scientists argue that ASIMO is a great engineering feat but not an intelligent machine — because it is unable to interact autonomously with unpredictabilities in its

Comment [KM201]: Answer 8

Comment [KM202]: Answer 9

Comment [KM203]: Answer 2 – A - How robot is used in the artistic work

Comment [KM204]: Answer 10

Comment [KM205]: Answer 11

Comment [KM206]: Answer 12

Comment [KM207]: Answer 3 – C - A robot that was modelled on an adult

Comment [KM208]: Answer 13

environment in meaningful ways, and learn from experience. Robots like Cog and Kismet and new robots at MIT's CSAIL and media lab, however, are beginning to do this.

Comment [KM209]: Answer 4 – D - A comparison between two different types of robots

L. These are exciting developments. Creating a machine that can walk, make gestures and learn from its environment is an amazing achievement. And watch this space: these achievements are likely rapidly to be improved upon. Humanoid robots could have a plethora of uses in society, helping to free people from everyday tasks. In Japan, for example, there is an aim to create robots that can do the tasks similar to an average human, and also act in more sophisticated situations as firefighters, astronauts or medical assistants to the elderly in the workplace and in homes — partly in order to counterbalance the effects of an ageing population.

Comment [KM210]: Answer 1 – E - The different uses of robots in society

M. So in addition to these potentially creative plans there lies a certain dehumanisation. The idea that companions can be replaced with machines, for example, suggests a mechanical and degraded notion of human relationships. On one hand, these developments express human creativity — our ability to invent, experiment, and to extend our control over the world. On the other hand, the aim to create a robot like a human being is spurred on by dehumanised ideas — by the sense that human companionship can be substituted by machines; that humans lose their humanity when they interact with technology; or that we are little more than surface and ritual behaviours, that can be simulated with metal and electrical circuits.

Comment [KM211]: Answer 5 – F - A criticism of the negative effects of humanoid robots on the society

N. The tension between the dehumanised and creative aspects of robots has long been explored in culture. In Karel Capek's *Rossum's Universal Robots*, a 1921 play in which the term 'robot' was first coined, although Capek's robots had human-like appearance and behaviour, the dramatist never thought these robots were human. For Capek, being human was about much more than appearing to be human. In part, it was about challenging a dehumanising system, and struggling to become recognised and given the dignity of more than a machine. A similar spirit would guide us well through twenty-first century experiments in robotics.

Comment [KM212]: Answer 7 – F - People feel humanity may be replaced by robots

Comment [KM213]: Answer 6 – G - A reference to the first use of the word "robot"

Questions 1-7

Reading Passage 1 has seven paragraphs, A-G. Which paragraph contains the following information? Write the correct letter, A-G, in boxes 1-7 on your answer sheet.

8. The different uses of robots in society = E
9. How robot is used in the artistic work= A
10. A robot that was modelled on an adult=C
11. A comparison between two different types of robots=D
12. A criticism of the negative effects of humanoid robots on the society=F
13. A reference to the first use of the word "robot"=G
14. People feel humanity may be replaced by robots =F

Questions 8-13

Complete the summary below using **NO MORE THAN TWO WORDS** from the passage.
Write your answers in boxes 8-13 on your answer sheet.

It took Honda 8 **17** years to make ASIMO, a human-looking robot that attracted broad interests from audiences. Unlike ASIMO, which has to be controlled through a computer installed in the **9 BACKPACK**, MIT's scientists aimed to make a robot that can imitate human behavior and **10 INTERACT** with humans. One of such particular inventions can express its own feelings through **11 FACIAL EXPRESSIONS**. Another innovative project is a robot called **12 COG**, which is expected to learn from its environment to gain some **13 INTELLIGENCE**.

READING PASSAGE 2

You should spend about 20 minutes on **Questions 14-26**

California's Age of Megafires

Drought, housing expansion, and oversupply of tinder make for bigger, hotter fires.

There's a reason fire squads now battling more than a dozen blazes in southern California are having such difficulty containing the flames, despite better preparedness than ever and decades of experience fighting fires fanned by the notorious Santa Ana winds. The wildfires themselves, experts say, generally are hotter, move faster, and **spread** more erratically than in the past.

Comment [KM214]: Answer 14 – erratically means in an unpredictable manner – not in the normal or usual manner

Megafires, also called "siege fires," are the increasingly frequent blazes that burn 500,000 acres or more — **10 times the size** of the average forest fire of 20 years ago. One of the current wildfires is the sixth biggest in California ever, in terms of acreage burned, according to state figures and news reports.

Comment [KM215]: Answer 15

The short-term explanation is that the region, which usually has dry summers, has had nine inches less **rainfall** than normal this year. Longer term, climate change across the West is leading to hotter days on average and longer **fire seasons**. The trend to more superhot fires, experts say, has been driven by a century-long policy of the US Forest Service to stop wildfires as quickly as possible. The unintentional consequence was to halt the natural eradication of underbrush, now the primary **fuel** for megafires.

Comment [KM216]: Answer 16

Comment [KM217]: Answer 17 – longer means extended

Comment [KM218]: Answer 18

Three other factors contribute to the trend, they add. First is climate change marked by a 1-degree F rise in average yearly temperature across the West. Second is a fire season that on average is 78 days longer than in the late 1980s. Third is increased building of homes and other structures in wooded areas. "We are increasingly building our homes ... in fire-prone ecosystems," says Dominik Kulakowski, adjunct professor of biology at

Clark University Graduate School of Geography in Worcester, Mass. Doing that "in many of the forests of the Western US ... is like building homes on the side of an active volcano."

In California, where population growth has averaged more than 600,000 a year for at least a decade, housing has pushed into such areas. "What once was open space is now residential homes providing fuel to make fires burn with greater intensity," says Terry McHale of the California Department of Forestry firefighters union. "With so much dryness, so many communities to catch fire, so many fronts to fight, it becomes an almost incredible job."

Comment [KM219]: Answer 19 – T - Open space has been disappearing in the past 10 years

That said, many experts give California high marks for making progress on preparedness since 2003, when the largest fires in state history scorched 750,000 acres, burned 3,640 homes, and killed 22 people. Stung then by criticism of bungling that allowed fires to spread when they might have been contained, personnel are meeting the peculiar challenges of neighborhood and canyon-hopping fires better than in recent years, observers say.

State promises to provide newer engines, planes, and helicopters have been fulfilled. Firefighters unions that then complained of dilapidated equipment, old fire engines, and insufficient blueprints for fire safety are now praising the state's commitment, noting that funding for firefighting has increased despite huge cuts in many other programs. We are pleased that the Schwarzenegger administration has been very proactive in its support of us and come through with budgetary support of the infrastructure needs we have long sought," says Mr. McHale with the firefighters union.

Comment [KM220]: Answer 20 – T - The equipment firefighters use today is better than before.

Besides providing money to upgrade the fire engines that must traverse the mammoth state and wind along serpentine canyon roads, the state has invested in better command-and-control facilities as well as the strategies to run them. "In the fire sieges of earlier years, we found out that we had the willingness of mutual-aid help from other jurisdictions and states, but we were not able to communicate adequately with them," says Kim Zagaris, chief of the state's Office of Emergency Services, fire and rescue branch. After a 2004 blue-ribbon commission examined and revamped those procedures, the statewide response "has become far more professional and responsive," he says.

Comment [KM221]: Answer 21 – NG – funding has increased and nothing has been mentioned about the

Besides ordering the California National Guard on Monday to make 1,500 guardsmen available for firefighting efforts, Gov. Arnold Schwarzenegger asked the Pentagon to

Comment [KM222]: Answer 22 – F - In the early years, no other states wished to help California to fight the fire

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Comment [KM223]: Answer 23 – F - The 2004 blue-ribbon commission did not make any achievements

send all available Modular Airborne Fighting Systems to the area. The military Lockheed C-130 cargo/utility aircraft carry a pressurized 3,000-gallon tank that can eject fire retardant or water in fewer than five seconds through two tubes at the rear of the plane. This load can cover an area 1/4-mile long and 60 feet wide to create a fire barrier. Governor Schwarzenegger also directed 2,300 inmate firefighters and 170 custody staff from the California Department of Corrections and Rehabilitation to work hand in hand with state and local firefighters.

Residents and government officials alike are noting the improvements with gratitude, even amid the loss of homes, churches, businesses, and farms. Despite such losses, there is a sense that the speed, dedication, and coordination of firefighters from several states and jurisdictions are resulting in greater efficiency than in past "siege fire" situations.

"I am extraordinarily impressed by the improvements we have witnessed between the last big fire and this," says Ross Simmons, a San Diego-based lawyer who had to evacuate both his home and business on Monday, taking up residence at a Hampton Inn 30 miles south of his home in Rancho Bernardo. After fires consumed 172,000 acres there in 2003, the San Diego region turned communitywide soul-searching into improved building codes, evacuation procedures, and procurement of new technology. Mr. Simmons and neighbors began receiving automated phone calls at 3:30 a.m. Monday morning telling them to evacuate. "Notwithstanding all the damage that will be caused by this, we will not come close to the loss of life because of what we have put in place since then," he says.

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.

Fighting Californian wildfires is still not an easy task because the fires the firefighters now face 14 **SPREAD** in more unpredictable manner in addition to the raging heat and faster speed than ever. Megafires, as they are called, are often 15 **10 TIMES** bigger than average forest fire. The reasons for this include 16 **RAINFALL** below the average and the extended 17 **FIRE SEASONS** due to climate change. And according to experts, the government policy has also contributed to this by accidentally making the underbrush the 18 **FUEL** for megafires.

Comment [KM224]: Answer 24 – B - Why does the author mention Governor Schwarzenegger, California National Guard, Pentagon and the California Department of Corrections and Rehabilitation? - **To illustrate the cross-state and cross-jurisdiction cooperation in fire-fighting**

Comment [KM225]: Answer 25 – A - How do the locals feel about the improvements made by the state government - Glad

Comment [KM226]: A. Answer 26 – D - According to Ross Simmons, which of the following statements is true - **People are less likely to die in fires now**

Questions 19-23

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

- | | |
|-----------|---|
| TRUE | <i>if the statement agrees with the information</i> |
| FALSE | <i>if the statement contradicts the information</i> |
| NOT GIVEN | <i>if there is no information on this</i> |

- 24 Open space has been disappearing in the past 10 years. = T
- 25 The equipment firefighters use today is better than before. = T
- 26 The state recruited new firefighters. = NG
- 27 In the early years, no other states wished to help California to fight the fire.=F
- 28 The 2004 blue-ribbon commission did not make any achievements. = F

Questions 24-26

Choose the correct letter. A, B, C or D. Write your answers in boxes 24-26 on your answer sheet.

24. Why does the author mention Governor Schwarzenegger, California National Guard, Pentagon and the California Department of Corrections and Rehabilitation?

- E. To show the active involvement of the Schwarzenegger's administration
- F. **To illustrate the cross-state and cross-jurisdiction cooperation in fire-fighting**

25. How do the locals feel about the improvements made by the state government?

- E. **glad**
- F. unsatisfied
- G. unconcerned
- H. bitter

26. According to Ross Simmons, which of the following statements is true?

- E. It's harder to evacuate people in daytime.
- F. People refuse to improve their house in fire resisting ability.
- G. People can hardly believe the magnitude of damage today.
- H. **People are less likely to die in fires now**

READING PASSAGE 3 Spend about 20 minutes

The Rainmaker

Sometimes ideas just pop up out of the blue. Or in Charlie Paton's case, out of the rain. "I was in a bus in Morocco travelling through the desert," he remembers. "It had been raining and the bus was full of hot, wet people. The windows steamed up and I went to sleep with a towel against the glass. When I woke, the thing was soaking wet. I had to wring it out. And it set me thinking. Why was it so wet?"

The answer, of course, was condensation. Back home in London, a physicist friend, Philip Davies, explained that the glass, chilled by the rain outside, had cooled the hot humid air inside the bus below its dew point, causing droplets of water to form on the inside of the window. Intrigued, Paton — a lighting engineer by profession — started rigging up his own equipment. "I made my own solar stills. It occurred to me that you might be able to produce water in this way in the desert, simply by cooling the air. I wondered whether you could make enough to irrigate fields and grow crops."

Today, a decade on, his dream has taken shape as a giant greenhouse on a desert island off Abu Dhabi in the Persian Gulf — the first commercially viable version of his "seawater greenhouse". Local scientists, working with Paton under a licence from his company Light Works, are watering the desert and growing vegetables in what is basically a giant dew-making machine that produces fresh water and cool air from sun and seawater. In awarding Paton first prize in a design competition two years ago, Marco Goldschmied, president of the Royal Institute of British Architects, called it "a truly original idea which has the potential to impact on the lives of millions of people living in coastal water-starved areas around the world".

The design has three main parts (see Graphic). The greenhouse faces into the prevailing wind so that hot, dry desert air blows in through the front wall of perforated cardboard, kept wet and cool by a constant trickle of seawater pumped up from the nearby shoreline. The evaporating seawater cools and moistens the air. Last June, for example, when the temperature outside the Abu Dhabi greenhouse was 46 °C, it was in the low 30s inside. While the air outside was dry, the humidity in the greenhouse was 90 per cent. The cool, moist air allows the plants to grow faster, and because much less water evaporates from the leaves their demand for moisture drops dramatically. Paton's crops thrived on a single litre of water per square metre per day, compared to 8 litres if they were growing outside.

Comment [KM227]: Answer 27 – TRUE - Paton came up with the idea of making water in desert by pure accident.

Comment [KM228]: Answer 28 – NG - The bus Paton rode in had poor ventilation because of broken fans – No mention of fans is there

Comment [KM229]: Answer 29 – TRUE - Paton woke up from sleep to discover that his towel was wet

Comment [KM230]: Answer 30 – F - Paton started his greenhouse project immediately after meeting up with his friend.

Comment [KM231]: Answer 31 – T - Paton later opened his own business in the Persian Gulf

The second feature also cools the air for the plants. Paton has constructed a double-layered roof with an outer layer of clear polythene and an inner, coated layer that reflects **infrared light**. Visible light can stream through to maximise photosynthesis, while heat from the infrared radiation is trapped in the space between the layers, away from the plants.

Comment [KM232]: Answer 32.

At the back of the greenhouse sits the third element, the main water-production unit. Just before entering this unit, the humid air of the greenhouse mixes with the **hot, dry air** from between the two layers of the roof. This means the air can absorb more **moisture** as it passes through a second moist cardboard wall. Finally, the hot saturated air hits a **condenser**. This is a metal surface kept cool by still more seawater - the equivalent of the window on Paton's Moroccan bus. Drops of **pure distilled water** form on the condenser and flow into a tank for irrigating the crops.

Comment [KM233]: Answer 33

Comment [KM234]: Answer 34

Comment [KM235]: Answer 35

Comment [KM236]: Answer 36

The greenhouse more or less runs itself. Sensors switch everything on when the sun rises and alter flows of air and seawater through the day in response to changes in temperature, humidity and sunlight. On windless days, **fans** ensure a constant flow of air through the greenhouse. "Once it is tuned to the local environment, you don't need anyone there for it to work," says Paton. "We can run the entire operation off one 13-amp plug, and in future we could make it entirely independent of the grid, powered from a few **solar panels**."

Comment [KM237]: Answer 37

Comment [KM238]: Answer 38

The net effect is to evaporate seawater into hot desert air, then recondense the moisture as fresh water. At the same time, cool moist air flows through the greenhouse to provide ideal conditions for the crops. The key to the seawater greenhouse's potential is its unique combination of desalination and air conditioning. By tapping the power of the sun it can cool as efficiently as a 500-kilowatt air conditioner while using less than 3 kilowatts of electricity. In practice, it evaporates 3000 litres of seawater a day and turns it into about 800 litres of fresh water —just enough to irrigate the plants. The rest is lost as water vapour.

Critics point out that construction costs of £25 per square metre mean the water is twice as expensive as water from a conventional desalination plant. But the comparison is misleading, says Paton. The natural air conditioning in the greenhouse massively increases the value of that water. Because the plants need only an eighth of the water used by those grown conventionally, the effective cost is only a quarter that of water from a standard desalinator. And **costs** should plummet when mass production begins, he adds.

Comment [KM239]: Answer 39

Comment [KM240]: Answer 40

Best of all, the greenhouses should be **environmentally friendly**. "I suppose there might be aesthetic objections to large structures on coastal sites," says Harris, "but it is a clean technology and doesn't produce pollution or even large quantities of hot water."

Questions 27-31

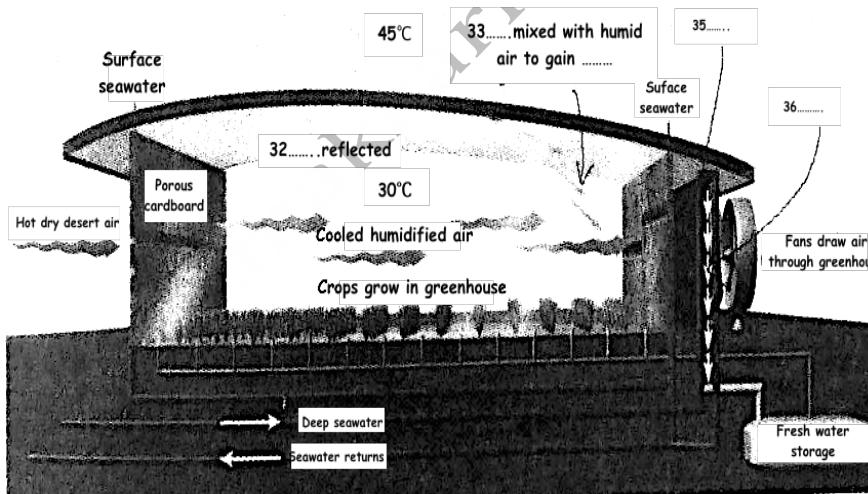
Do the following statements agree with the information given in Reading Passage 3?

- | | |
|------------------|---|
| TRUE | <i>if the statement agrees with the information</i> |
| FALSE | <i>if the statement contradicts the information</i> |
| NOT GIVEN | <i>if there is no information on this</i> |

- 32 Paton came up with the idea of making water in desert by pure accident.= T
 33 The bus Paton rode in had poor ventilation because of broken fans.=NG
 34 Paton woke up from sleep to discover that his towel was wet. =T
 35 Paton started his greenhouse project immediately after meeting up with his friend.=F
 36 Paton later opened his own business in the Persian Gulf.=T

Questions 32-36

Complete the diagram below using NO MORE THAN TWO WORDS from the passage. Write your answers in boxes 32-36 on your answer sheet.

**32. INFRARED LIGHT****33. HOT DRY AIR****34. MOISTURE****35. CONDENSER****36. PURE DISTILLED WATER**

Questions 37-40

Complete the summary below using **NO MORE THAN TWO WORDS** from the passage. Write your answers in boxes 37-40 on your answer sheet.

The greenhouse Paton built is installed with 37 **FANS** to keep the air flowing if the wind stands still, and it is expected in the future to rely on electricity provided solely by 38 **SOLAR PANELS**. Despite the high construction costs compared to desalination plant, the plants grown in Paton's greenhouse need much less water, and if produced in large quantities the 39 **COSTS** could be reduced remarkably. In addition to all these advantages, it is also 40 **ENVIRONMENTALLY** because it is clean and pollution free.

Exam Reading 7

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.

Comment [KM241]: Answer 1 – T - Dr. Engel has been working on animal self-medication research for 10 years. Decade means 10 years

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 *Veronica*. 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.

Comment [KM242]: Answer 5
Comment [KM243]: Answer 6

Since the *Veronica*-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

Comment [KM244]: Answer 7
Comment [KM245]: Answer 3 – F - Birds, like Macaw, often eat clay because it is part of their natural diet

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

Comment [KM246]: Answer 8 – detoxify and not detoxifying because after modal verbs such as can, we use only the first form of verb

Comment [KM247]: Answer 11. Clay can neutralize the 11 TOXIC (D) content of their diet.

Comment [KM248]: Answer 13 - Another example of this is found in chimps eating leaves of often 13 UNPLEASANT (C) taste

Comment [KM249]: Answer 9

Comment [KM250]: Answer 4 – F - According to Dr. Engel, research into animal self-medication can help to invent new painkillers

Comment [KM251]: Answer 10 – Geophagy – but write only G

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, Rwandan 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.

Comment [KM252]: Answer 12 - where people purchase 12 **CLAY TABLETS (E)** at market stalls as a kind of medication to their illnesses

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

5. Dr. Engel has been working on animal self-medication research for 10 years.=T
6. Animals often walk a considerable distance to find plants for medication.=NG
7. Birds, like Macaw, often eat clay because it is part of their natural diet.=F
8. According to Dr. Engel, research into animal self-medication can help to invent new painkillers. = F

Comment [KM253]: Answer 2 – NG – No reference as to whether animals have to travel a long distance or not

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 PITH of <i>Veronia</i>	Contained chemicals, 6 TERPENES that can kill parasites
1999	James Gilardi and his colleagues	Macau	Seeds (contain 7 ALKALOIDS) and clay	Clay can 8 DETOXIFY the poisonous contents in food
1972	Richard Wrangham	Chimpanzee	Leaves with tiny 9 HOOKS on surface	Such leaves can catch and 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 **GEOPHAGY (G)**, a soil-consuming behavior commonly found across animals species, because earth, often clay, can neutralize the 11 **TOXIC (D)** content of their diet. Such behavior can also be found among humans in Africa, where people purchase 12 **CLAY TABLETS (E)** at market stalls as a kind of medication to their illnesses. Another example of this is found in chimps eating leaves of often 13 **UNPLEASANT (C)** 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

Malaria. 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.

- G. 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.

Comment [KM254]: Answer 15 – explanation in the next comment

Comment [KM255]: Answer 14 and 15 - Before the link between malaria and 14 **INSECTS/MOSQUITOS** was established, there were many popular theories circulating among the public, one of which points to 15 **MIASMA** the unclean air.

Comment [KM256]: Answer 16 - The lack of proper treatment affected the country so badly that rural people in malaria infested places had extremely short 16 **LIFE EXPECTANCY**

Comment [KM257]: Answer 26 - A description of how malaria affects the human body

Comment [KM258]: Answer 17 - thus giving rise to the idea that the disease was 17 **HEREDITARY**

Comment [KM259]: Answer 18 - People believed in these theories until mosquito was found to be the 18 **(REAL) CULPRIT** in the 1880s.

H. 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.

Comment [KM260]: Answer 22 - A breakthrough in the theory of the cause of malaria

I. 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".

Comment [KM261]: Answer 19 - NG - The volunteers of the Italian experiments that provided assuring evidence were from all over Italy. – it is not mentioned where the volunteers were from

Comment [KM262]: Answer 20 - T - It's possible to come out of malarial zones alive.

J. 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

Comment [KM263]: Answer 21 - F - The government successfully managed to give all people quinine medication.

Comment [KM264]: Answer 25 - A setback in the battle against malaria due to government policies

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.

K.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.

Comment [KM265]: Answer 24 - A description of an expert who didn't do anything to restrict the spread of disease

L.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".

Comment [KM266]: Answer 23 - A story for today's readers

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 **INSECTS/MOSQUITOS** was established, there were many popular theories circulating among the public, one of which points to 15 **MIASMA** the unclean air. The lack of proper treatment affected the country so badly that rural people in malaria infested places had extremely short 16 **LIFE EXPECTANCY** The disease spread so quickly, especially in the south of Italy,

thus giving rise to the idea that the disease was 17 **HEREDITARY**. People believed in these theories until mosquito was found to be the 18 (**REAL**) **CULPRIT** 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

- 22 The volunteers of the Italian experiments that provided assuring evidence were from all over Italy. = NG
- 23 It's possible to come out of malarial zones alive. = T
- 24 The government successfully managed to give all people quinine medication. = F



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.

- 27 A breakthrough in the theory of the cause of malaria = B
- 28 A story for today's readers = F
- 29 A description of an expert who didn't do anything to restrict the spread of disease = E
- 30 A setback in the battle against malaria due to government policies = D
- 31 A description of how malaria affects the human body = A



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.

Comment [KM267]: Answer 39 – A - has accused fellow scientists of refusing to see the truth

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 rubbed 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

Comment [KM268]: Answer 27 – YES - Hubbert has a high-profile reputation amongst ODAC members

Comment [KM269]: Answer 28 – NG - Oil is likely to last longer than some other energy sources – nothing about such a comparison is given

Comment [KM270]: Answer 32

Comment [KM271]: Answer 29 – NO- The majority of geologists believe that oil will start to run out some time this decade. – many rubbed it means many didn't believe it

Comment [KM272]: Answer 30 – NO - Over 50 percent of the oil we know about is currently being recovered.

Comment [KM273]: Answer 33 -

Comment [KM274]: Answer 34

Comment [KM275]: Answer 35

Comment [KM276]: Answer 38 – B – Hubbert - has convinced others that oil production will follow a particular model

Comment [KM277]: Answer 37 D – Rene Dahan - has provided the longest-range forecast regarding oil supply

Comment [KM278]: Answer 31 – YES - History has shown that some of Hubbert's principles were mistaken

Comment [KM279]: Answer 36 – E – Michael Lynch - has found fault in geological research procedure

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 11 non-OPEC countries over the next decade alone. Ouch.

Comment [KM280]: Answer 40 – C - has expressed doubt over whether improved methods of extracting oil are possible

Questions 27-31

Do the following statements agree with the information given in Reading Passage 3?

- | | |
|-----------|---|
| YES | <i>if the statement agrees with the information</i> |
| NO | <i>if the statement contradicts the information</i> |
| NOT GIVEN | <i>if there is no information on this</i> |

32. Hubbert has a high-profile reputation amongst ODAC members. = YES

33. Oil is likely to last longer than some other energy sources. = NG

34. The majority of geologists believe that oil will start to run out some time this decade. = NO

35. Over 50 percent of the oil we know about is currently being recovered. = NO

36. History has shown that some of Hubbert's principles were mistaken. = YES

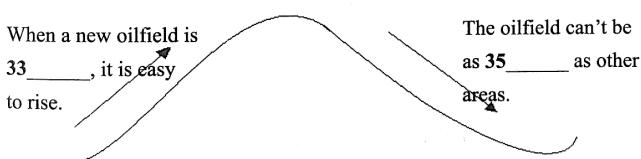
**Questions 32-35**

Complete the sentences below using NO MORE THAN ONE WORD OR NUMBER from the passage. Write your answers in boxes 32-35 on your answer sheet.

Many people believed Hubbert's theory was 32. **CONTROVERSIAL** when it was originally presented.

The recovery of the oil gets more 34_____

as the reservoir gets older.



33. – TAPPED

34. – EXPENSIVE

35. – COMPETITIVE

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.'

41. has found fault in geological research procedure. = E
42. has provided the longest-range forecast regarding oil supply. = D
43. has convinced others that oil production will follow a particular model. = B
44. has accused fellow scientists of refusing to see the truth. = A
45. has expressed doubt over whether improved methods of extracting oil are possible. = C

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

Exam Reading Answers

Test 1

1. TEN THOUSAND

2. SOUTH-EAST ASIA

3. (HARD) SEEDS

4. F

5. A

6. D

7. C

8. E

9. B

10. C

11. NOT GIVEN

12. FALSE

13. TRUE

14. B

15. C

16. D

17. TRUE

18. FALSE

19. TRUE

20. FALSE

21. NOT GIVEN

22. TRUE

23. TRUE

24. B

25. D

26. F

27. C

28. B

29. PERSIAN WARS

30. ALLIES

31. GEOGRAPHICAL KNOWLEDGE

32. PILGRIMAGE

33. INDIA

34. COLONIES

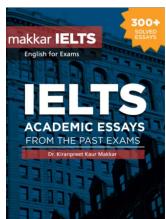
35. PRINCIPLES

36. WEALTHY

37. D

38. B

39. A

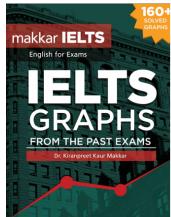


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- Lots of students have achieved 7 bands in writing by just following this book
- Just read 5 essays from this book everyday and within two months you can write beautiful essays in your exam

40. D

TEST 2

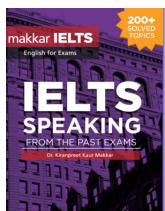
1. C
2. A
3. D
4. B
5. A
6. A
7. BEAKS
8. VOMITING
9. HARDENS
10. TRUE
11. NOT GIVEN
12. FALSE
13. NOT GIVEN
14. III
15. X
16. VIII
17. IX
18. VI
19. I
20. IV
21. EXTRA SNACKS
22. FIREWOOD
23. 85%
24. 50%
25. A
26. C
27. D
28. A
29. G
30. B
31. H
32. F
33. A
34. D
35. C
36. FALSE
37. NOT GIVEN
38. TRUE
39. TRUE
40. FALSE



- Only book ever written by anyone for IELTS Academic Writing Task 1
- Includes more than 160 different type of Solved Tasks which are often repeated in the IELTS exam.
- Also includes Vocabulary & Tips on Grammar for Academic Writing Task 1
- TIP: To get a good score always cover all the points provided in TASK 1, never miss out any information

TEST 3

1. TRUE
2. FALSE
3. NOT GIVEN
4. NOT GIVEN
5. TRUE
6. FALSE
7. A
8. C
9. C
10. A
11. B
12. B
13. C, E, F
14. EXTINCTION
15. DRUGS, CROPS
16. PIONEERS
17. JOSEPH BANKS
18. UNDERGROUND VAULTS
19. TRUE
20. NOT GIVEN
21. TRUE
22. TRUE
23. FALSE
24. TRUE
25. A
26. D
27. TRUE
28. NOT GIVEN
29. FALSE
30. NOT GIVEN
31. TRUE
32. TRUE
33. CONSUMER'S CHOICE
34. RISK AND BENEFIT
35. SKIING
36. GM CROPS
37. WHEAT AND RICE
38. PRODUCTION
39. MISTRUST
40. A



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TEST 4

- 1. B
- 2. C
- 3. D
- 4. A
- 5. B
- 6. A
- 7. E
- 8. D
- 9. G
- 10. H

11. NOT GIVEN

12. TRUE

13. NOT GIVEN

14. B

15. G

16. C

17. A

18. HOT-AIR BALLOON

19. IRON PARTICLES

20. COMPASS (NEEDLE)

21. THIN METAL PROBE

22. MUDBRICK

23. LOOSER DAMP SOIL

24. SPRING SEASON

25. CLARIFY

26. B

27. D

28. B

29. B

30. D

31. C

32. TRUE

33. TRUE

34. NOT GIVEN

35. NOT GIVEN

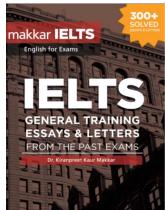
36. D

37. F

38. H

39. C

40. A



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TEST 5

1. FALSE
2. NOT GIVEN
3. FALSE
4. FALSE
5. TRUE
6. TRUE
7. CHEMICAL ENGINEERING
8. ASCANIO SOBRERO
9. GUNPOWDER
10. STOCKHOLM
11. DETONATOR
12. PNEUMATIC DRILL
13. COST
14. IV
15. V
16. II
17. X
18. VII
19. I
20. VIII
21. A
22. C
23. PARENTAL GUIDANCE
24. COMPASS
25. PREDATORS
26. VISIBLE
27. C
28. A
29. D
30. B
31. B
32. B
33. C
34. TRUE
35. TRUE
36. TRUE
37. FALSE
38. NOT GIVEN
39. TRUE
40. FALSE

TEST 6

1. E
2. A
3. C
4. D
5. F
6. G
7. F
8. 17
9. BACKPACK
10. INTERACT
11. FACIAL EXPRESSIONS
12. COG
13. INTELLIGENCE
14. SPREAD
15. 10 TIMES
16. RAINFALL
17. FIRE SEASONS
18. FUEL
19. TRUE
20. TRUE
21. NOT GIVEN
22. FALSE
23. FALSE
24. B
25. A
26. D
27. TRUE
28. NOT GIVEN
29. TRUE
30. FALSE
31. TRUE
32. INFRARED LIGHT
33. HOT DRY AIR
34. MOISTURE
35. CONDENSER
36. PURE DISTILLED WATER
37. FANS
38. SOLAR PANELS
39. COSTS
40. ENVIRONMENTALLY

TEST 7

1. TRUE
2. NOT GIVEN
3. FALSE
4. FALSE
5. PITH
6. TERPENES
7. ALKALOIDS
8. DETOXIFY
9. HOOKS
10. G
11. D
12. E
13. C
14. INSECTS/MOSQUITOES
15. "MIASMA"
16. LIFE EXPECTANCY
17. HEREDITARY
18. (REAL) CULPRIT
19. NOT GIVEN
20. TRUE
21. FALSE
22. B
23. F
24. E
25. D
26. A
27. YES
28. NOT GIVEN
29. NO
30. NO
31. YES
32. CONTROVERSIAL
33. TAPPED
34. EXPENSIVE
35. COMPETITIVE
36. E
37. D
38. B
39. A
40. C