

## Test 1

### READING PASSAGE 1

You should spend about 20 minutes on **Questions 1-13** which are based on **Reading Passage 1**.

## Looking in the telescope

A story is told that around 400 years ago some children were fooling around in an eye glass shop. They noticed that when they placed lenses one on top of the other, they were able to see a considerable distance. They played around with the concept for a while, experimenting with what happened when they varied the distance between the lenses. Hans Lippershey, the Dutch lens maker who eventually applied for the first telescope patent, credits children as having been his motivation for the invention of the first telescope.

The first telescopes built in the early 1600s were very primitive inventions allowing the user to see around 3-times further than the naked eye. It was not too long however, until Italian astronomer Galileo heard about the invention 'that through use of correctly positioned lenses, allowed people to see things a long way away'. The tools used in the manufacturing of the first refracting telescope was all Galileo needed to know and within 24 hours he had developed a better one. In fact, the process of improvements Galileo made on Lippershey's telescope were quite dramatic. Whereas the original version had a magnification of 3, the new telescope had a magnification of around 30. Galileo achieved these extraordinary results by figuring out the combination of the positions of the lenses and also by making his own lenses which were of better quality. Although he originally thought they were stars, the better quality lenses – and some scientific analysis – enabled him to eventually use his telescopes to see the moons of Jupiter. Galileo's refracting telescopes – so-called due to the way they handled the light that passed through them – were the standard at that time.

Some 70 years later, British scientist Isaac Newton, explored the way a prism refracts white light into an array of colors. He recognised that a lens was a circular prism and that the separation of colors limited the effectiveness of the telescopes in use at the time. Newton created a Reflective Telescope, one that used a dish-shaped or parabolic mirror to collect light and concentrate the image before it was visible in the eyepiece. Thus, lenses used for magnification in telescopes were replaced by mirrors. Mirrors have since been the standard for telescopes. In fact, according to telescope researcher Dr. Carl Addams, the basic designs of telescopes have not changed much in the last 100 years. What has changed however, is the way technology has been used to improve them. For example, the larger telescopes in the world today are around 10 metres in diameter and the mirrors placed within them are so finely polished that even at the microscopic level there are no scratches or bumps on them at all. To achieve such a flawless surface requires a very expensive process that operates with the utmost precision.

1 -: The separation or change of direction of a ray of light when passed through a glass of water.

The mid 1700s, saw the discovery and production of the Achromatic telescope. This type of telescope differed from previous ones in the way it handled the different wavelengths of light. The first person who succeeded in making achromatic refracting telescopes seems to have been the Englishman, Chester Moore Hall. The telescope design used two pieces of special optical glass known as crown and flint Each side of each piece was ground and polished and then the two pieces were assembled together. Achromatic lenses bring two wavelengths – typically red and blue – into focus in the same plane. Makers of achromatic telescopes had difficulty locating disks of flint glass of suitable purity needed to construct them. In the late 1700s, prizes were offered by the French Academy of Sciences for any chemist or glass-manufacturer that could create perfect discs of optical flint glass however, no one was able to provide a large disk of suitable purity and clarity.

Currently the largest telescopes are around eight to ten metres in size. These extremely expensive and sophisticated pieces of equipment are located primarily throughout Europe and America. Dr Addams believes that the telescopes of the future will be a gigantic improvement in what is currently considered state-

of-the-art. Telescopes that are 20 or 30 metres in diameter are currently being planned, and there has been a suggestion put forward by a European firm that they would like to build a 100-metre telescope. Says Addams, 'The quality of the glass needed to build a 100 meter telescope is like building a lens the size of a football field and having the largest bump in that football field being a ten-thousandth of a human hair'. The engineering and technology required to build such a flawless reflective surface is most impressive.

### **Questions 1-5**

**Choose the correct letter, A, B, C or D. Write the correct letter in boxes 1-5 on your answer sheet.**

1. According to the writer, the first telescope was
  - A. invented by children.
  - B. made by a lens maker.
  - C. a reflective telescope.
  - D. quite a complex piece of equipment
  
2. The writer states that Galileo
  - A. improved on the design of the first telescope.
  - B. created the first reflective telescope.
  - C. took 24 hours to make a reflective telescope.
  - D. allowed people to see 3 times further than the first telescope.
  
3. The Galileo telescope was better than the first telescope because it
  - A. used mirrors rather than glass.
  - B. was longer than the first telescope.
  - C. used better lens positioning and quality.
  - D. used better quality lenses and glass.
  
4. The writer states that today large telescopes are
  - A. 20 or 30 metres in size.
  - B. as big as 100 metres.
  - C. very costly items.
  - D. as good as will ever be built.
  
5. Large, powerful telescopes are difficult to build because
  - A. designs have not changed in nearly 100 years.
  - B. it is difficult to locate the flint glass needed for them.
  - C. the area needed to house the telescope is simply too large.
  - D. The lenses must be extremely reflective.

## Questions 6-10

Classify the following features as belonging to

- A. the Achromatic telescope
- B. the Reflective telescope
- C. the Refracting telescope

Write the correct letter A, B or C, in boxes 6-10 on your answer sheet.

- 6. The first telescopes made.
- 7. Uses a series of lenses one on top of the other.
- 8. Highly polished lenses.
- 9. First use of mirrors to collect light.
- 10. Two pieces of glass stuck together.

## Questions 11 -13

Complete the summary below using words from the passage.

Choose **NO MORE THAN THREE WORDS** from the passage for each answer.

Write your answers in boxes 11-13 on your answer sheet

There have been a number of changes in telescopes since they were first invented. For example, Galileo's telescope increased magnification of the previously made telescope by a factor of 30. He did this by altering the lenses \_\_\_\_ 11 and also constructing lenses \_\_\_\_ 12.

Other improvements followed but the most significant step forward, and still a major factor today in telescope design, has been the inclusion of \_\_\_\_\_13.

## READING PASSAGE 2

You should spend about 20 minutes on **Questions 14 – 27** which are based on **Reading Passage 2**.

### The intense rate of change in the world

**A.** The intense rate of change in the world gives rise to numerous new products – many of them electronic. What is brand new and state-of-the-art one month is quickly relegated to old model' status the next. Within the world of computing, this frenetic pace of change has led to millions of out-dated, worthless products. Keystone, an American-based research company reported. In 2005, one computer became obsolete for every new one introduced in the market. By the year 2010, experts estimate that in the USA there will be over 500 million obsolete computers. Most of these computers will be destined for landfills, incinerators or hazardous waste exports.' Old, outdated keyboards, monitors and hard drives all combine to produce what is now widely known as 'e-waste' and the way to appropriately dispose of them is proving to be a challenge.

**B.** Most computers are a complicated assembly of hundreds of different materials, many of which are highly toxic. Most computer users are unaware that these toxic metals, acids, plastics and other substances have been shown to be the cause of various blood diseases and cancers. Amongst workers involved in the recycling of computer products, there has been a proliferation of blood diseases. Printed circuit boards for example, contain heavy metals such as antimony, silver, chromium, zinc, lead, tin and copper. Environmentalist Kieran Shaw estimates there is hardly any other product for which the sum of the environmental impacts of raw material, extraction, industrial refining and production, use and disposal is so extensive as for printed circuit boards.

**C.** Workers involved in the disposal of computers via incineration are themselves being exposed to significantly high levels of toxicity. Copper, for example, is a catalyst in the release of harmful chemicals when exposed to the high temperatures of incineration. In US and Canadian environments, incineration is one of the greatest sources of heavy metal contamination of the atmosphere. Unfortunately, another form of incineration, smelting, can present dangers similar to incineration. Concerns have been expressed that the Noranda Smelter in Quebec, Canada is producing atmospheric pollutants from the residual presence of plastics in the e-scrap.

**D.** In an effort to explore other alternatives, landfills have been tried, Studies have shown however, that even the best landfills are not completely safe. In fact the shortcomings of dealing with waste via modern landfills are well documented. The main 'offender' in the area of metal leaching is mercury. In varying degrees, mercury escapes or leaches from certain electronic devices such as circuit breakers, condensers and computer circuit boards into the soil. According to Phil Stevenson, managing director of CleanCo a recycling plant in the UK, 'Everyone knows that landfills leak – it has become common knowledge. Even the best, state-of-the-art landfills are not completely tight throughout their lifetimes, to one degree or another, a certain amount of chemical and metal leaching occurs. The situation is far worse for older or less stringent dump sites. If uncontrolled fires are allowed to burn through these landfill areas, other toxic chemicals such as lead and cadmium are released.

**E.** An overwhelming majority of the world's hazardous e-waste is generated by the industrialised market economies. Because labour costs are cheap and government regulations in some countries are decidedly lax, the exporting of e-waste has been practiced as another method to deal with its disposal. In the USA for example, Datatek, a research company, estimated that it was 12 times cheaper to ship old computer monitors to China than it was to recycle them. Data on the prevalence of this activity is scarce due to past bad publicity and dealers of e-scrap not bothering to determine the final destination of the products they sell. In 1989 the world community established the Basel Convention on the Transboundary Movement of Hazardous Waste for final Disposal to stop the industrialised nations of the OECD from dumping their waste on and in less-developed countries.

**F.** Europe has taken the lead on e-waste management by requiring governments to implement laws controlling the production and disposal of electrical products. The European Union (EU) has drafted legislation on Waste from Electrical and Electronic Equipment (the WEEE Directive) based on a concept known as Extended Producer Responsibility (EPR). Essentially, EPR places the responsibility of the production and disposal squarely on the shoulders of the producers of electronic products, it requires that producers consider carefully the environmental impact of the products they bring to the marketplace. The aim of EPR is to encourage producers of electrical equipment to prevent pollution and reduce resource and energy use at each stage of the product life cycle. The lead in Europe has been necessary because WEEE is about three times higher than the growth of any other municipal waste streams.

**G.** WEEE legislation will phase-out the use of toxic substances such as mercury, cadmium and lead in electronic and electrical goods by the year 2008. It will require producers of electrical equipment to be responsible financially for the collection, recycling and disposal of their products. It has stipulated that products containing any lead, mercury, cadmium and other toxic substances must not be incinerated. It encourages producers to integrate an increasing quantity of recycled material in any new products they produce. In fact, between 70% and 90% by weight of all collected equipment must be recycled or re-used. These directives will go a long way toward improving the e-waste problem in Europe and other governments of the world should look seriously at implementation of some or all of the legislation.

### **Questions 14-20**

*Reading Passage 2 has 7 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.** Exporting e-waste
- ii.** The hazards of burning computer junk
- iii.** Blame developed countries for e-waste
- iv.** Landfills are not satisfactory
- v.** Producer's legal responsibility
- vi.** The dangers of computer circuit boards
- vii.** Electronic changes bring waste
- viii.** European e-waste laws
- ix.** The dangerous substances found in computers
- x.** Landfills and mercury leaching
- xi.** New products must contain recycled products

14. Paragraph A
15. Paragraph B
16. Paragraph C
17. Paragraph D
18. Paragraph E
19. Paragraph F
20. Paragraph G

### Questions 25-27

Choose **THREE** letters, A-G,

Write the correct letters in boxes 25-27 on your answer sheet.

According to the information in the text, which **THREE** of the following pollution laws have been proposed in Europe?

- A. Manufacturers will have to pay for disposal of their products.
- B. Manufacturers must dispose of the electronic goods they produce.
- C. Products made in Europe must be completely recyclable.
- D. Consumers are responsible for the disposal of the products they purchase.
- E. Disposal of products containing mercury should be incinerated.
- F. Other governments around the world will implement the EU laws.
- G. A large percentage of old products must be included in new products.

## READING PASSAGE 3

You should spend about 20 minutes on **Questions 28-40** which are based on **Reading Passage 3**.

# PREPARING FOR THE THREAT

It is an unfortunate fact that over the past 20 years, around 260 million people a year have been affected by natural disasters around the world. Regrettably, a vast majority of the victims of this staggering number are from developing countries. Whether it be earthquakes, tornadoes, floods, volcanoes or tsunamis, over the past twenty years, natural disasters have been happening more frequently and affecting more people than ever before. It follows that the international community should address the issue of 'disaster preparedness' and establish a process by which natural disasters are dealt with.

On December 26, 2004, a massive earthquake centered off the coast of the Indonesian island of Sumatra caused a series of deadly tsunamis in the Indian Ocean. The damage from this extraordinary disaster was estimated to be in the vicinity of US \$ 13 billion – the equivalent to the combined GDP of the world's developing countries for an entire year. In a matter of seconds, the tsunami waves wiped out the long years of struggle for development, and the world was once again reminded of the fearsome and destructive power of natural disasters.

Gross Domestic Product is the total value of goods and services produced by a country in a year. The United Nations designated the 1990s as the International Decade for Natural Disaster Reduction, and has been active in promoting and developing international cooperation on disaster preparedness. The UN's Yokohama Strategy for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation was adopted in 1994. Among the guidelines, developing countries are encouraged to organise and implement their domestic resources for disaster reduction activities and donor developed countries are encouraged to give greater priority to disaster prevention, mitigation and preparedness in their assistance programs and budgets, including through increasing financial contributions.

In January, 2005 the UN World Conference on Disaster Reduction (WCDR) met in Kobe, Hyogo Prefecture to discuss and debate how the international community should address issues of disaster preparedness and mitigation. The meeting itself attended by over 4,000 delegates representing some 168 countries occurred almost 10 years to the day after the Great Hanshin earthquake in Kobe. The January meeting of the WCDR in Kobe provided experts and scientists from over 150 countries, government officials, Non-Government Organisation (NGOs) and United Nations representatives an opportunity to review the Yokohama Strategy. It recorded on the 2005-15 Yokohama Strategy Action Plan that participant countries and agencies should work over the next 10 years to reduce vulnerability to natural disasters. The Action Plan encourages as a first step, the integration of disaster prevention programs in all development and policy-making plait for all countries. Jim Edgeland, UN representative stated, "Disaster risk reduction is not an additional expense – it is an essential investment in our common future, but the benefits of this investment will be calculated not only in dollars or euros or yen saved, but most importantly, in saved lives in every corner of the globe."

Perhaps the most significant work done at the WCDR meetings was the drafting and adoption of the Hyogo Declaration. This document expresses the united determination of the international community to rely not only on advanced technology or facilities for disaster preparedness, but on a people-centered early warning system. The people centered system requires effective communication and education in the building of disaster-resilient countries and communities.

As the intergovernmental panels of the WCDR were meeting, the Great Hanshin-Awaji Earthquake Forum was also underway. The earthquake measuring a magnitude of 7.3, led to the loss of over 6,400 lives and widespread destruction affecting some 460,000 households. This public forum offered a variety of sessions, during which the lessons learned from the disastrous earthquake were discussed. Earthquake expert Professor Tomohiro Kawata said, "Because this disaster happened over a decade ago, the memory of the

devastation can be forgotten. Part of our gathering here today is to make sure that we do not forget what happened back in 1995.” Also included were some personal stories from the earthquake victims themselves. Earthquake victim Kumiko Nagota told attendees that her house collapsed in the Kobe earthquake and she was trapped under it. She tried to call for help but after a while she lost her voice and just had to wait there until help came. Attendees were told of how the town mobilised to facilitate recovery and reconstruction. An exhibition hall showed pictures of mounds of rubble produced by the earthquake as well as a display of objects donated by earthquake victims including a broken clock and a child’s toy that melted in the fires caused by the earthquake. Said Kawata, “As well as being a memorial, our facility and, indeed this forum, is a place to learn from earthquake experiences and incorporate the things we learned into our preparations for future disasters”. During the forum, it was agreed that in May 2005, a new hub for the coordination of international disaster recovery support activities would be established in Kobe.

**Questions 28-31 Do the following statements agree with the information given in Reading Passage 3?**

**In boxes 28-31 on your answer sheet, write**

**TRUE** if the statement is true

**FALSE** if the statement is false

**NOT GIVEN** if the information is not given in the passage

**28.** Mostly people from poorer countries are affected by natural disasters.

**29.** Present-day natural disasters are more dangerous than disasters of the past.

**30.** It will take the countries affected by the tsunami many years to rebuild.

**31.** Being prepared and knowing what to do in a disaster should be a global issue.

**Questions 32-35**

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

**Write the correct letter in boxes 27-31 on your answer sheet**

**32.** According to the passage, reducing the risk of disasters is important because

- A.** countries can then focus on growth and development.
- B.** communities will be drawn together in support of each other.
- C.** help international communities to be more economically stable.
- D.** it will save lives and money.

**33.** According to the writer, the most important outcome of the World Conference on Disaster Reduction (WCDR) was the

- A.** discussion and debate amongst the international community attendees.
- B.** chance for participants to review the Yokohama Strategy.
- C.** writing and acceptance of the Hyogo Declaration.



D. acknowledgement that disaster risk reduction is an investment in the future.

34. The town of Kobe was effectively rebuilt due to

- A. the support of the United Nations.
- B. the people of Kobe.
- C. the Government of Japan.
- D. the leadership of Professor Kawata.

35. The stated purpose of the Great Hanshin-Awaji Earthquake Forum was

- A. to help others be better prepared for any future natural disasters.
- B. for people to learn more about natural disasters.
- C. to remember the Kobe earthquake of 1995.
- D. for people to remember and learn from what happened.

**Questions 36-40**

Look at the following statements (Questions 36–40) and the list of disaster control initiatives below.

Match each statement with the correct disaster control initiative, A-D.

Write the correct letter, A-D, in boxes 36-40 on your answer sheet.

<b>Disaster Control Initiatives</b>
A. Hyogo Declaration
B. Great Hanshin-Awaji Earthquake Forum
C. World Conference on Disaster Reduction
D. Yokohama Strategy for a Safer World

36. people should be the early broadcasters of disaster information

37. led to a new central area for support in disaster recovery

38. a reminder of the impact of disasters

39. in times of disaster, developed countries should do more to help less-developed countries

40. national development and disaster prevention should be considered at the same time

## Test 2

### Reading Passage 1

You should spend about 20 minutes on **Questions 1-13**, which are based on **Reading Passage 1** below.

## Early Childhood Education

**New Zealand's National Party spokesman on education, Dr Lockwood Smith, recently visited the US and Britain. Here he reports on the findings of his trip and what they could mean for New Zealand's education policy**

**A.** 'Education To Be More' was published last August. It was the report of the New Zealand Government's Early Childhood Care and Education Working Group. The report argued for enhanced equity of access and better funding for childcare and early childhood education institutions. Unquestionably, that's a real need; but since parents don't normally send children to pre-schools until the age of three, are we missing out on the most important years of all?

**B.** A 13 year study of early childhood development at Harvard University has shown that, by the age of three, most children have the potential to understand about 1000 words - most of the language they will use in ordinary conversation for the rest of their lives.

Furthermore, research has shown that while every child is born with a natural curiosity, it can be suppressed dramatically during the second and third years of life. Researchers claim that the human personality is formed during the first two years of life, and during the first three years children learn the basic skills they will use in all their later learning both at home and at school. Once over the age of three, children continue to expand on existing knowledge of the world.

**C.** It is generally acknowledged that young people from poorer socio-economic backgrounds tend to do less well in our education system. That's observed not just in New Zealand, but also in Australia, Britain and America. In an attempt to overcome that educational under-achievement, a nationwide programme called 'Headstart' was launched in the United States in 1965. A lot of money was poured into it. It took children into pre-school institutions at the age of three and was supposed to help the children of poorer families succeed in school.

Despite substantial funding, results have been disappointing. It is thought that there are two explanations for this. First, the programme began too late. Many children who entered it at the age of three were already behind their peers in language and measurable intelligence. Second, the parents were not involved. At the end of each day, 'Headstart' children returned to the same disadvantaged home environment.

**D.** As a result of the growing research evidence of the importance of the first three years of a child's life and the disappointing results from 'Headstart', a pilot programme was launched in Missouri in the US that focused on parents as the child's first teachers. The 'Missouri' programme was predicated on research showing that working with the family, rather than bypassing the parents, is the most effective way of helping children get off to the best possible start in life. The four-year pilot study included 380 families who were about to have their first child and who represented a cross-section of socio-economic status, age and family configurations. They included single-parent and two-parent families, families in which both parents worked, and families with either the mother or father at home.

The programme involved trained parent-educators visiting the parents' home and working with the parent, or parents, and the child. Information on child development, and guidance on things to look for and expect as the child grows were provided, plus guidance in fostering the child's intellectual, language, social and motor-skill development. Periodic check-ups of the child's educational and sensory development (hearing and vision) were made to detect possible handicaps that interfere with growth and development. Medical problems were referred to professionals.

Parent-educators made personal visits to homes and monthly group meetings were held with other new parents to share experience and discuss topics of interest. Parent resource centres, located in school buildings, offered learning materials for families and facilitators for child care.

**E.** At the age of three, the children who had been involved in the 'Missouri' programme were evaluated alongside a cross-section of children selected from the same range of socio-economic backgrounds and family situations, and also a random sample of children that age. The results were phenomenal. By the age of three, the children in the programme were significantly more advanced in language development than their peers, had made greater strides in problem solving and other intellectual skills, and were further along in social development, in fact, the average child on the programme was performing at the level of the top 15 to 20 per cent of their peers in such things as auditory comprehension, verbal ability and language ability.

Most important of all, the traditional measures of 'risk', such as parents' age and education, or whether they were a single parent, bore little or no relationship to the measures of achievement and language development. Children in the programme performed equally well regardless of socio-economic disadvantages. Child abuse was virtually eliminated. The one factor that was found to affect the child's development was family stress leading to a poor quality of parent-child interaction. That interaction was not necessarily bad in poorer families.

**F.** These research findings are exciting. There is growing evidence in New Zealand that children from poorer socio-economic backgrounds are arriving at school less well developed and that our school system tends to perpetuate that disadvantage. The initiative outlined above could break that cycle of disadvantage. The concept of working with parents in their homes, or at their place of work, contrasts quite markedly with the report of the Early Childhood Care and Education Working Group. Their focus is on getting children and mothers access to childcare and institutionalised early childhood education. Education from the age of three to five is undoubtedly vital, but without a similar focus on parent education and on the vital importance of the first three years, some evidence indicates that it will not be enough to overcome educational inequity.

### **Questions 1-4**

*Reading Passage 1 has six sections, A-F.*

*Which paragraph contains the following information?*

*Write the correct letter A-F in boxes 1—4 on your answer sheet.*

1. details of the range of family types involved in an education programme
2. reasons why a child's early years are so important
3. reasons why an education programme failed
4. a description of the positive outcomes of an education programme

### **Questions 5-10**

*Classify the following features as characterising*

- A. the 'Headstart' programme
- B. the 'Missouri' programme
- C. both the 'Headstart' and the 'Missouri' programmes
- D. neither the 'Headstart' nor the 'Missouri' programme

Write the correct letter **A, B, C or D** in boxes 5-10 on your answer sheet.

5. was administered to a variety of poor and wealthy families
6. continued with follow-up assistance in elementary schools
7. did not succeed in its aim
8. supplied many forms of support and training to parents
9. received insufficient funding
10. was designed to improve pre-schoolers' educational development

### **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. Most 'Missouri' programme three-year-olds scored highly in areas such as listening, speaking, reasoning and interacting with others.
12. 'Missouri' programme children of young, uneducated, single parents scored less highly on the tests.
13. The richer families in the 'Missouri' programme had higher stress levels.

## Reading Passage 2

You should spend about 20 minutes on Question 14 - 26, which are based on Reading Passage 2 on the following pages.

### Disappearing Delta

**A.** The fertile land of the Nile delta is being eroded along Egypt's Mediterranean coast at an astounding rate, in some parts estimated at 100 metres per year. In the past, land scoured away from the coastline by the currents of the Mediterranean Sea used to be replaced by sediment brought down to the delta by the River Nile, but this is no longer happening.

**B.** Up to now, people have blamed this loss of delta land on the two large dams at Aswan in the south of Egypt, which hold back virtually all of the sediment that used to flow down the river. Before the dams were built, the Nile flowed freely, carrying huge quantities of sediment north from Africa's interior to be deposited on the Nile delta. This continued for 7,000 years, eventually covering a region of over 22,000 square kilometres with layers of fertile silt. Annual flooding brought in new, nutrient-rich soil to the delta region, replacing what had been washed away by the sea, and dispensing with the need for fertilizers in Egypt's richest food-growing area. But when the Aswan dams were constructed in the 20th century to provide electricity and irrigation, and to protect the huge population centre of Cairo and its surrounding areas from annual flooding and drought, most of the sediment with its natural fertilizer accumulated up above the dam in the southern, upstream half of Lake Nasser, instead of passing down to the delta.

**C.** Now, however, there turns out to be more to the story. It appears that the sediment-free water emerging from the Aswan dams picks up silt and sand as it erodes the river bed and banks on the 800-kilometre trip to Cairo. Daniel Jean Stanley of the Smithsonian Institute noticed that water samples taken in Cairo, just before the river enters the delta, indicated that the river sometimes carries more than 850 grams of sediment per cubic metre of water - almost half of what it carried before the dams were built.

'I'm ashamed to say that the significance of this didn't strike me until after I had read 50 or 60 studies,' says Stanley in *Marine Geology*. 'There is still a lot of sediment coming into the delta, but virtually no sediment comes out into the Mediterranean to replenish the coastline.'

So this sediment must be trapped on the delta itself.'

**D.** Once north of Cairo, most of the Nile water is diverted into more than 10,000 kilometres of irrigation canals and only a small proportion reaches the sea directly through the rivers in the delta. The water in the irrigation canals is still or very slow-moving and thus cannot carry sediment, Stanley explains. The sediment sinks to the bottom of the canals and then is added to fields by farmers or pumped with the water into the four large freshwater lagoons that are located near the outer edges of the delta. So very little of it actually reaches the coastline to replace what is being washed away by the Mediterranean currents.

**E.** The farms on the delta plains and fishing and aquaculture in the lagoons account for much of Egypt's food supply. But by the time the sediment has come to rest in the fields and lagoons it is laden with municipal, industrial and agricultural waste from the Cairo region, which is home to more than 40 million people. 'Pollutants are building up faster and faster,' says Stanley.

Based on his investigations of sediment from the delta lagoons, Frederic Siegel of George Washington University concurs. 'In Manzalah Lagoon, for example, the increase in mercury, lead, copper and zinc coincided with the building of the High Dam at Aswan, the availability of cheap electricity, and the development of major power-based industries,' he says. Since that time the concentration of mercury has increased significantly. Lead from engines that use leaded fuels and from other industrial sources has also increased dramatically. These poisons can easily enter the food chain, affecting the productivity of fishing and farming. Another problem is that agricultural wastes include fertilizers which stimulate increases in plant growth in the lagoons and upset the ecology of the area, with serious effects on the fishing industry.

**F.** According to Siegel, international environmental organisations are beginning to pay closer attention to the region, partly because of the problems of erosion and pollution of the Nile delta, but principally because they

fear the impact this situation could have on the whole Mediterranean coastal ecosystem. But there are no easy solutions. In the immediate future, Stanley believes that one solution would be to make artificial floods to flush out the delta waterways, in the same way that natural floods did before the construction of the dams. He says, however, that in the long term an alternative process such as desalination may have to be used to increase the amount of water available. 'In my view, Egypt must devise a way to have more water running through the river and the delta/ says Stanley. Easier said than done in a desert region with a rapidly growing population.

### **Questions 14-17**

*Reading Passage 2 has six paragraphs, A-F.*

*Choose the correct heading for paragraphs B and D-F from the list of headings below.*

*Write the correct number i-viii in boxes 14-17 on your answer sheet.*

#### **List of Headings**

- i.** Effects of irrigation on sedimentation
- ii.** The danger of flooding the Cairo area
- iii.** Causing pollution in the Mediterranean
- iv.** Interrupting a natural process
- v.** The threat to food production
- vi.** Less valuable sediment than before via Egypt's disappearing coastline
- viii.** Looking at the long-term impact

*Example Paragraph A Answer vii*

**14.** Paragraph B

*Example Paragraph C Answer vi*

**15.** Paragraph D

**16.** Paragraph E

**17.** Paragraph F

### **Questions 18-23**

*Do the following statements reflect the claims of the writer in Reading Passage 2?*

*In boxes 18-23 on your answer sheet, write*

**YES** if the statement reflects the claims of the writer

**NO** if the statement contradicts the claims of the writer

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

**18.** Coastal erosion occurred along Egypt's Mediterranean coast before the building of the Aswan dams.

**19.** Some people predicted that the Aswan dams would cause land loss before they were built.

**20.** The Aswan dams were built to increase the fertility of the Nile delta.

**21.** Stanley found that the levels of sediment in the river water in Cairo were relatively high.

**22.** Sediment in the irrigation canals on the Nile delta causes flooding

**23.** Water is pumped from the irrigation canals into the lagoons.

### **Questions 24-26**

*Complete the summary of paragraphs E and F with the list of words A-H below.*

*Write the correct letter A-H in boxes 24 26 on your answer sheet.*

<b>A.</b> artificial floods	<b>B.</b> desalination	<b>C.</b> delta waterways	<b>D.</b> natural floods
<b>E.</b> nutrients	<b>F.</b> pollutants	<b>G.</b> population control	<b>H.</b> sediment

In addition to the problem of coastal erosion, there has been a marked increase in the level of **24** ..... contained in the silt deposited in the Nile delta. To deal with this, Stanley suggests the use of **25** ..... in the short term, and increasing the amount of water available through **26** ..... in the longer term.

## Reading Passage 3

You should spend about 20 minutes on Question 28 - 40, which are based on Reading Passage 3 on the following pages.

### The Return of Artificial Intelligence

*It is becoming acceptable again to talk of computers performing human tasks such as problem-solving and pattern-recognition.*

**A.** After years in the wilderness, the term 'artificial intelligence' (AI) seems poised to make a comeback. AI was big in the 1980s but vanished in the 1990s. It re-entered public consciousness with the release of AI, a movie about a robot boy. This has ignited public debate about AI, but the term is also being used once more within the computer industry. Researchers, executives and marketing people are now using the expression without irony or inverted commas. And it is not always hype. The term is being applied, with some justification, to products that depend on technology that was originally developed by AI researchers. Admittedly, the rehabilitation of the term has a long way to go, and some firms still prefer to avoid using it. But the fact that others are starting to use it again suggests that AI has moved on from being seen as an over-ambitious and under-achieving field of research.

**B.** The field was launched, and the term 'artificial intelligence' coined, at a conference in 1956, by a group of researchers that included Marvin Minsky, John McCarthy, Herbert Simon and Alan Newell, all of whom went on to become leading figures in the field. The expression provided an attractive but informative name for a research programme that encompassed such previously disparate fields as operations research, cybernetics, logic and computer science. The goal they shared was an attempt to capture or mimic human abilities using machines. That said, different groups of researchers attacked different problems, from speech recognition to chess playing, in different ways; AI unified the field in name only. But it was a term that captured the public imagination.

**C.** Most researchers agree that AI peaked around 1985. A public reared on science-fiction movies and excited by the growing power of computers had high expectations. For years, AI researchers had implied that a breakthrough was just around the corner. Marvin Minsky said in 1967 that within a generation the problem of creating 'artificial intelligence' would be substantially solved. Prototypes of medical-diagnosis programs and speech recognition software appeared to be making progress. It proved to be a false dawn. Thinking computers and household robots failed to materialise, and a backlash ensued. 'There was undue optimism in the early 1980s,' says David Leake, a researcher at Indiana University. 'Then when people realised these were hard problems, there was retrenchment. By the late 1980s, the term AI was being avoided by many researchers, who opted instead to align themselves with specific sub-disciplines such as neural networks, agent technology, case-based reasoning, and so on.'

**D.** Ironically, in some ways AI was a victim of its own success. Whenever an apparently mundane problem was solved, such as building a system that could land an aircraft unattended, the problem was deemed not to have been AI in the first place. 'If it works, it can't be AI,' as Dr Leake characterises it. The effect of repeatedly moving the goal-posts in this way was that AI came to refer to 'blue-sky' research that was still years away from commercialisation. Researchers joked that AI stood for 'almost implemented'. Meanwhile, the technologies that made it once the market, such as speech recognition, language translation and decision-support software, were no longer regarded as AI. Yet all three once fell well within the umbrella of AI research.

**E.** But the tide may now be turning, according to Dr Leake. HNC Software of San Diego, backed by a government agency, reckon that their new approach to artificial intelligence is the most powerful and promising approach ever discovered. HNC claim that their system, based on a duster of 30 processors, could be used to spot camouflaged vehicles on a battlefield or extract a voice signal from a noisy background - tasks humans can do well, but computers cannot. 'Whether or not their technology lives up to the claims made for it, the fact that HNC are emphasising the use of AI is itself an interesting development,' says Dr Leake.



**F.** Another factor that may boost the prospects for AI in the near future is that investors are now looking for firms using clever technology, rather than just a clever business model, to differentiate themselves. In particular, the problem of information overload, exacerbated by the growth of e-mail and the explosion in the number of web pages, means there are plenty of opportunities for new technologies to help filter and categorise information - classic AI problems. That may mean that more artificial intelligence companies will start to emerge to meet this challenge.

**G.** The 1969 film, 2001: A Space Odyssey, featured an intelligent computer called HAL 9000. As well as understanding and speaking English, HAL could play chess and even learned to lipread. HAL thus encapsulated the optimism of the 1960s that intelligent computers would be widespread by 2001. But 2001 has been and gone, and there is still no sign of a HAL-like computer. Individual systems can play chess or transcribe speech, but a general theory of machine intelligence still remains elusive. It may be, however, that the comparison with HAL no longer seems quite so important, and AI can now be judged by what it can do, rather than by how well it matches up to a 30-year-old science-fiction film. 'People are beginning to realise that there are impressive things that these systems can do.' says Dr Leake hopefully.

### **Questions 27-31**

*Reading Passage 3 has seven paragraphs, A-G.*

*Which paragraph contains the following information?*

*Write the correct letter A-G in boxes 27-31 on your answer sheet.*

**NB** You may use any letter more than once.

- 27. how AI might have a military impact
- 28. the fact that AI brings together a range of separate research areas
- 29. the reason why AI has become a common topic of conversation again
- 30. how AI could help deal with difficulties related to the amount of information available electronically
- 31. where the expression AI was first used

### **Questions 32-37**

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

*In boxes 32-37 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 about this

- 32. The researchers who launched the field of AI had worked together on other projects in the past.
- 33. In 1985, AI was at its lowest point.
- 34. Research into agent technology was more costly than research into neural networks.
- 35. Applications of AI have already had a degree of success.
- 36. The problems waiting to be solved by AI have not changed since 1967.
- 37. The film 2001: A Space Odyssey, reflected contemporary ideas about the potential of AI computers.

### **Questions 38-40**

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

*Write your answers in boxes 38-40 on your answer sheet.*

**38.** According to researchers, in the late 1980s there was a feeling that

- A.** a general theory of AI would never be developed.
- B.** original expectations of AI may not have been justified.
- C.** a wide range of applications was close to fruition.
- D.** more powerful computers were the key to further progress.

**39.** In Dr Leake's opinion, the reputation of AI suffered as a result of

- A.** changing perceptions.
- B.** premature implementation.
- C.** poorly planned projects.
- D.** commercial pressures.

**40.** The prospects for AI may benefit from

- A.** existing AI applications.
- B.** new business models.
- C.** orders from internet-only companies.
- D.** new investment priorities.

## Test 3

### Reading Passage 1

You should spend about 20 minutes on **Questions 1-13**, which are based on **Reading Passage 1** below.

## The Impact of Wilderness Tourism

**A.** The market for tourism in remote areas is booming as never before. Countries all across the world are actively promoting their 'wilderness' regions - such as mountains, Arctic lands, deserts, small islands and wetlands - to high-spending tourists. The attraction of these areas is obvious - by definition, wilderness tourism requires little or no initial investment. But that does not mean that there is no cost. As the 1992 United Nations Conference on Environment and Development recognized, these regions are fragile (i.e. highly vulnerable to abnormal pressures) not just in terms of their ecology, but also in terms of the culture of their inhabitants. The three most significant types of fragile environment in these respects, and also in terms of the proportion of the Earth's surface they cover, are deserts, mountains and Arctic areas. An important characteristic is their marked seasonality, with harsh conditions prevailing for many months each year. Consequently, most human activities, including tourism, are limited to quite clearly defined parts of the year.

Tourists are drawn to these regions by their natural landscape beauty and the unique cultures of their indigenous people. And poor governments in these isolated areas have welcomed the new breed of 'adventure tourist', grateful for the hard currency they bring. For several years now, tourism has been the prime source of foreign exchange in Nepal and Bhutan. Tourism is also a key element in the economies of Arctic zones such as Lapland and Alaska and in desert areas such as Ayers Rock in Australia and Arizona's Monument Valley.

**B.** Once a location is established as a main tourist destination, the effects on the local community are profound. When hill-farmers, for example, can make more money in a few weeks working as porters for foreign trekkers than they can in a year working in their fields, it is not surprising that many of them give up their farm-work, which is thus left to other members of the family. In some hill-regions, this has led to a serious decline in farm output and a change in the local diet, because there is insufficient labour to maintain terraces and irrigation systems and tend to crops. The result has been that many people in these regions have turned to outside supplies of rice and other foods.

In Arctic and desert societies, year-round survival has traditionally depended on hunting animals and fish and collecting fruit over a relatively short season. However, as some inhabitants become involved in tourism, they no longer have time to collect wild food; this has led to increasing dependence on bought food and stores. Tourism is not always the culprit behind such changes. All kinds of wage labour, or government handouts, tend to undermine traditional survival systems. Whatever the cause, the dilemma is always the same: what happens if these new, external sources of income dry up?

The physical impact of visitors is another serious problem associated with the growth in adventure tourism. Much attention has focused on erosion along major trails, but perhaps more important are the deforestation and impacts on water supplies arising from the need to provide tourists with cooked food and hot showers. In both mountains and deserts, slow-growing trees are often the main sources of fuel and water supplies may be limited or vulnerable to degradation through heavy use.

**C.** Stories about the problems of tourism have become legion in the last few years. Yet it does not have to be a problem. Although tourism inevitably affects the region in which it takes place, the costs to these fragile environments and their local cultures can be minimized. Indeed, it can even be a vehicle for reinvigorating local cultures, as has happened with the Sherpas of Nepal's Khumbu Valley and in some Alpine villages. And a growing number of adventure tourism operators are trying to ensure that their activities benefit the local population and environment over the long term.

In the Swiss Alps, communities have decided that their future depends on integrating tourism more effectively with the local economy. Local concern about the rising number of second home developments in

the Swiss Pays d'Enhaut resulted in limits being imposed on their growth. There has also been a renaissance in communal cheese production in the area, providing the locals with a reliable source of income that does not depend on outside visitors.

Many of the Arctic tourist destinations have been exploited by outside companies, who employ transient workers and repatriate most of the profits to their home base. But some Arctic communities are now operating tour businesses themselves, thereby ensuring that the benefits accrue locally. For instance, a native corporation in Alaska, employing local people, is running an air tour from Anchorage to Kotzebue, where tourists eat Arctic food, walk on the tundra and watch local musicians and dancers.

Native people in the desert regions of the American Southwest have followed similar strategies, encouraging tourists to visit their pueblos and reservations to purchase high-quality handicrafts and artwork. The Acoma and San Ildefonso pueblos have established highly profitable pottery businesses, while the Navajo and Hopi groups have been similarly successful with jewellery.

Too many people living in fragile environments have lost control over their economies, their culture and their environment when tourism has penetrated their homelands. Merely restricting tourism cannot be the solution to the imbalance, because people's desire to see new places will not just disappear. Instead, communities in fragile environments must achieve greater control over tourism ventures in their regions, in order to balance their needs and aspirations with the demands of tourism. A growing number of communities are demonstrating that, with firm communal decision-making, this is possible. The critical question now is whether this can become the norm, rather than the exception.

### **Questions 1-3**

*Reading Passage 3 has three sections, A-C.*

*Choose the correct heading for each section from the list of headings below.*

*Write the correct number i-vi in boxes 1-3 on your answer sheet.*

#### **List of Headings**

- i.** The expansion of international tourism in recent years
- ii.** How local communities can balance their own needs with the demands of wilderness tourism
- iii.** Fragile regions and the reasons for the expansion of tourism there
- iv.** Traditional methods of food-supply in fragile regions
- v.** Some of the disruptive effects of wilderness tourism
- vi.** The economic benefits of mass tourism

**1.** Section A

**2.** Section B

**3.** Section C

### **Questions 4-9**

Do the following statements reflect the opinion of the writer of Reading Passage I?

In boxes 4-9 on your answer sheet, write

**YES** if the statement reflects the opinion of the writer

**NO** if the statement contradicts the opinion of the writer

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

4. The low financial cost of selling up wilderness tourism makes it attractive to many countries.
5. Deserts, mountains and Arctic regions are examples of environments that are both ecologically and culturally fragile.
6. Wilderness tourism operates throughout the year in fragile areas.
7. The spread of tourism in certain hill-regions has resulted in a fall in the amount of food produced locally.
8. Traditional food-gathering in desert societies was distributed evenly over the year.
9. Government handouts do more damage than tourism does to traditional patterns of food-gathering.

### **Questions 10-13**

Complete the table below.

Choose **ONE WORD** from Reading Passage I for each answer

Write your answers in boxes 10-13 on your answer sheet.

<b>The positive ways in which some local communities have responded to tourism</b>	
<b>People/Location</b>	<b>Activity</b>
Swiss Pays d'Enhaut	Revived production of <b>10</b> .....
Arctic communities	Operate <b>11</b> ..... businesses
Acoma and San Ildefonso	Produce and sell <b>12</b> .....
Navajo and Hopi	Produce and sell <b>13</b> .....

## Reading Passage 2

You should spend about 20 minutes on **Question 14 - 26**, which are based on **Reading Passage 2** on the following pages.

### Flawed Beauty: the problem with toughened glass

On 2nd August 1999, a particularly hot day in the town of Cirencester in the UK, a large pane of toughened glass in the roof of a shopping centre at Bishops Walk shattered without warning and fell from its frame.

When fragments were analysed by experts at the giant glass manufacturer Pilkington, which had made the pane, they found that minute crystals of nickel sulphide trapped inside the glass had almost certainly caused the failure.

'The glass industry is aware of the issue,' says Brian Waldron, chairman of the standards committee at the Glass and Glazing Federation, a British trade association, and standards development officer at Pilkington. But he insists that cases are few and far between. 'It's a very rare phenomenon,' he says.

Others disagree. 'On average I see about one or two buildings a month suffering from nickel sulphide related failures,' says Barrie Josie, a consultant engineer involved in the Bishops Walk investigation. Other experts tell of similar experiences. Tony Wilmott of London based consulting engineers Sandberg, and Simon Armstrong at CladTech Associates in Hampshire both say they know of hundreds of cases. 'What you hear is only the tip of the iceberg,' says Trevor Ford, a glass expert at Resolve Engineering in Brisbane, Queensland. He believes the reason is simple: 'No-one wants bad press.'

Toughened glass is found everywhere, from cars and bus shelters to the windows, walls and roofs of thousands of buildings around the world. It's easy to see why. This glass has five times the strength of standard glass, and when it does break it shatters into tiny cubes rather than large, razor-sharp shards. Architects love it because large panels can be bolted together to make transparent walls, and turning it into ceilings and floors is almost as easy.

It is made by heating a sheet of ordinary glass to about 620°C to soften it slightly, allowing its structure to expand, and then cooling it rapidly with jets of cold air. This causes the outer layer of the pane to contract and solidify before the interior. When the interior finally solidifies and shrinks, it exerts a pull on the outer layer that leaves it in permanent compression and produces a tensile force inside the glass. As cracks propagate best in materials under tension, the compressive force on the surface must be overcome before the pane will break, making it more resistant to cracking.

The problem starts when glass contains nickel sulphide impurities. Trace amounts of nickel and sulphur are usually present in the raw materials used to make glass, and nickel can also be introduced by fragments of nickel alloys falling into the molten glass. As the glass is heated, these atoms react to form tiny crystals of nickel sulphide. Just a tenth of a gram of nickel in the furnace can create up to 50,000 crystals.

These crystals can exist in two forms: a dense form called the alpha phase, which is stable at high temperatures, and a less dense form called the beta phase, which is stable at room temperatures. The high temperatures used in the toughening process convert all the crystals to the dense, compact alpha form. But the subsequent cooling is so rapid that the crystals don't have time to change back to the beta phase. This leaves unstable alpha crystals in the glass, primed like a coiled spring, ready to revert to the beta phase without warning.

When this happens, the crystals expand by up to 4%. And if they are within the central, tensile region of the pane, the stresses this unleashes can shatter the whole sheet. The time that elapses before failure occurs is unpredictable. It could happen just months after manufacture, or decades later, although if the glass is heated - by sunlight, for example - the process is speeded up. Ironically, says Graham Dodd, of consulting engineers Arup in London, the oldest pane of toughened glass known to have failed due to nickel sulphide inclusions was in Pilkington's glass research building in Lathom, Lancashire. The pane was 27 years old.

Data showing the scale of the nickel sulphide problem is almost impossible to find. The picture is made more complicated by the fact that these crystals occur in batches. So even if, on average, there is only one inclusion in 7 tonnes of glass, if you experience one nickel sulphide failure in your building, that probably means you've got a problem in more than one pane. Josie says that in the last decade he has worked on over 15 buildings with the number of failures into double figures.

One of the worst examples of this is Waterfront Place, which was completed in 1990. Over the following decade the 40-storey Brisbane block suffered a rash of failures. Eighty panes of its toughened glass shattered due to inclusions before experts were finally called in. John Barry, an expert in nickel sulphide contamination at the University of Queensland, analysed every glass pane in the building. Using a studio camera, a photographer went up in a cradle to take photos of every pane. These were scanned under a modified microfiche reader for signs of nickel sulphide crystals. 'We discovered at least another 120 panes with potentially dangerous inclusions which were then replaced,' says Barry. 'It was a very expensive and time-consuming process that took around six months to complete.'

Though the project cost A\$1.6 million (nearly £700,000), the alternative - re-cladding the entire building - would have cost ten times as much.

### **Questions 14-17**

*Look at the following people and the list of statements below.*

*Match each person with the correct statement.*

*Write the correct letter **A-H** in boxes 14-17 on your answer sheet.*

#### **List of Statements**

- A.** suggests that publicity about nickel sulphide failure has been suppressed
- B.** regularly sees cases of nickel sulphide failure
- C.** closely examined all the glass in one building
- D.** was involved with the construction of Bishops Walk
- E.** recommended the rebuilding of Waterfront Place
- F.** thinks the benefits of toughened glass are exaggerated
- G.** claims that nickel sulphide failure is very unusual
- H.** refers to the most extreme case of delayed failure

**14.** Brian Waldron

**15.** Trevor Ford

**16.** Graham Dodd

**17.** John Barry

### **Questions 18-23**

Complete the summary with the list of words **A-P** below.

Write your answers in boxes 18- 23 on your answer sheet.

**A.** numerous    **B.** detected    **C.** quickly    **D.** agreed  
**E.** warm    **F.** sharp    **G.** expands    **H.** slowly  
**I.** unexpectedly    **J.** removed    **K.** contracts    **L.** disputed  
**M.** cold    **N.** moved    **O.** small    **P.** calculated

## **Toughened Glass**

Toughened glass is favoured by architects because it is much stronger than ordinary glass, and the fragments are not as **18** ..... when it breaks. However, it has one disadvantage: it can shatter **19** ..... This fault is a result of the manufacturing process. Ordinary glass is first heated, then cooled very **20** ..... The outer layer **21** ..... before the inner layer, and the tension between the two layers which is created because of this makes the glass stronger. However, if the glass contains nickel sulphide impurities, crystals of nickel sulphide are formed. These are unstable, and can expand suddenly, particularly if the weather is **22** ..... If this happens, the pane of glass may break. The frequency with which such problems occur is **23** ..... by glass experts Furthermore, the crystals cannot be detected without sophisticated equipment.

### **Questions 24-26**

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

In boxes 24-26 on your answer sheet, write

**TRUE** if the statement agrees with the information

**FALSE** if the statement contradicts the information

**NOT GIVEN** if there is no information on this

**24.** Little doubt was expressed about the reason for the Bishops Walk accident.

**25.** Toughened glass has the same appearance as ordinary glass.

**26.** There is plenty of documented evidence available about the incidence of nickel sulphide failure.



## Reading Passage 3

You should spend about 20 minutes on Question 28 - 40, which are based on Reading Passage 3 on the following pages.

### The effects of light on plant and animal species

Light is important to organisms for two different reasons. Firstly it is used as a cue for the timing of daily and seasonal rhythms in both plants and animals, and secondly it is used to assist growth in plants.

Breeding in most organisms occurs during a part of the year only, and so a reliable cue is needed to trigger breeding behaviour. Day length is an excellent cue, because it provides a perfectly predictable pattern of change within the year. In the temperate zone in spring, temperatures fluctuate greatly from day to day, but day length increases steadily by a predictable amount. The seasonal impact of day length on physiological responses is called photoperiodism, and the amount of experimental evidence for this phenomenon is considerable. For example, some species of birds' breeding can be induced even in midwinter simply by increasing day length artificially (Wolfson 1964). Other examples of photoperiodism occur in plants. A short-day plant flowers when the day is less than a certain critical length. A long-day plant flowers after a certain critical day length is exceeded. In both cases the critical day length differs from species to species. Plants which flower after a period of vegetative growth, regardless of photoperiod, are known as day-neutral plants.

Breeding seasons in animals such as birds have evolved to occupy the part of the year in which offspring have the greatest chances of survival. Before the breeding season begins, food reserves must be built up to support the energy cost of reproduction, and to provide for young birds both when they are in the nest and after fledging. Thus many temperate-zone birds use the increasing day lengths in spring as a cue to begin the nesting cycle, because this is a point when adequate food resources will be assured.

The adaptive significance of photoperiodism in plants is also clear. Short-day plants that flower in spring in the temperate zone are adapted to maximising seedling growth during the growing season. Long-day plants are adapted for situations that require fertilization by insects, or a long period of seed ripening. Short-day plants that flower in the autumn in the temperate zone are able to build up food reserves over the growing season and over winter as seeds. Day-neutral plants have an evolutionary advantage when the connection between the favourable period for reproduction and day length is much less certain. For example, desert annuals germinate, flower and seed whenever suitable rainfall occurs, regardless of the day length.

The breeding season of some plants can be delayed to extraordinary lengths. Bamboos are perennial grasses that remain in a vegetative state for many years and then suddenly flower, fruit and die (Evans 1976). Every bamboo of the species *Chusquea abietifolia* on the island of Jamaica flowered, set seed and died during 1884. The next generation of bamboo flowered and died between 1916 and 1918, which suggests a vegetative cycle of about 31 years. The climatic trigger for this flowering cycle is not yet known, but the adaptive significance is clear. The simultaneous production of masses of bamboo seeds (in some cases lying 12 to 15 centimetres deep on the ground) is more than all the seed-eating animals can cope with at the time, so that some seeds escape being eaten and grow up to form the next generation (Evans 1976).

The second reason light is important to organisms is that it is essential for photosynthesis. This is the process by which plants use energy from the sun to convert carbon from soil or water into organic material for growth. The rate of photosynthesis in a plant can be measured by calculating the rate of its uptake of carbon. There is a wide range of photosynthetic responses of plants to variations in light intensity. Some plants reach maximal photosynthesis at one-quarter full sunlight, and others, like sugarcane, never reach a maximum, but continue to increase photosynthesis rate as light intensity rises.

Plants in general can be divided into two groups: shade-tolerant species and shade-intolerant species. This classification is commonly used in forestry and horticulture. Shade-tolerant plants have lower photosynthetic rates and hence have lower growth rates than those of shade-intolerant species. Plant species become adapted to living in a certain kind of habitat, and in the process evolve a series of characteristics that

prevent them from occupying other habitats. Grime (1966) suggests that light may be one of the major components directing these adaptations. For example, eastern hemlock seedlings are shade-tolerant. They can survive in the forest understorey under very low light levels because they have a low photosynthetic rate.

### **Questions 27-33**

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

*In boxes 27-33 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

27. There is plenty of scientific evidence to support photoperiodism.
28. Some types of bird can be encouraged to breed out of season.
29. Photoperiodism is restricted to certain geographic areas.
30. Desert annuals are examples of long-day plants.
31. Bamboos flower several times during their life cycle.
32. Scientists have yet to determine the cue for *Chusquea ubietifolia*'s seasonal rhythm.
33. Eastern hemlock is a fast-growing plant.

### **Questions 34-40**

*Complete the sentences.*

*Choose **NO MORE THAN THREE WORDS** from the passage for each answer.*

*Write your answers in boxes 34-40 on your answer sheet.*

34. Day length is a useful cue for breeding in areas where ..... are unpredictable.
35. Plants which do not respond to light levels are referred to as .....
36. Birds in temperate climates associate longer days with nesting and the availability of .....
37. Plants that flower when days are long often depend ..... to help them reproduce.
38. Desert annuals respond to ..... as a signal for reproduction.
39. There is no limit to the photosynthetic rate in plants such as .....
40. Tolerance to shade is one criterion for the ..... of plants in forestry and horticulture.

## Test 4

### Reading Passage 1

You should spend about 20 minutes on **Questions 1-13**, which are based on **Reading Passage 1** below.

## LOST FOR WORDS

### Many minority languages are on the danger list

In the Native American Navajo nation, which sprawls across four states in the American south-west, the native language is dying. Most of its speakers are middle-aged or elderly. Although many students take classes in Navajo, the schools are run in English. Street signs, supermarket goods and even their own newspaper are all in English. Not surprisingly, linguists doubt that any native speakers of Navajo will remain in a hundred years' time.

Navajo is far from alone. Half the world's 6,800 languages are likely to vanish within two generations - that's one language lost every ten days. Never before has the planet's linguistic diversity shrunk at such a pace. At the moment, we are heading for about three or four languages dominating the world,' says Mark Pagel, an evolutionary biologist at the University of Reading. 'It's a mass extinction, and whether we will ever rebound from the loss is difficult to know.'

Isolation breeds linguistic diversity: as a result, the world is peppered with languages spoken by only a few people. Only 250 languages have more than a million speakers, and at least 3,000 have fewer than 2,500. It is not necessarily these small languages that are about to disappear. Navajo is considered endangered despite having 150,000 speakers. What makes a language endangered is not just the number of speakers, but how old they are. If it is spoken by children it is relatively safe. The critically endangered languages are those that are only spoken by the elderly, according to Michael Krauss, director of the Alassk Native Language Center, in Fairbanks.

Why do people reject the language of their parents? It begins with a crisis of confidence, when a small community finds itself alongside a larger, wealthier society, says Nicholas Ostler, of Britain's Foundation for Endangered Languages, in Bath. 'People lose faith in their culture,' he says. 'When the next generation reaches their teens, they might not want to be induced into the old traditions.'

The change is not always voluntary. Quite often, governments try to kill off a minority language by banning its use in public or discouraging its use in schools, all to promote national unity.

The former US policy of running Indian reservation schools in English, for example, effectively put languages such as Navajo on the danger list. But Salikoko Mufwene, who chairs the Linguistics department at the University of Chicago, argues that the deadliest weapon is not government policy but economic globalisation. 'Native Americans have not lost pride in their language, but they have had to adapt to socio-economic pressures,' he says. 'They cannot refuse to speak English if most commercial activity is in English.' But are languages worth saving? At the very least, there is a loss of data for the study of languages and their evolution, which relies on comparisons between languages, both living and dead. When an unwritten and unrecorded language disappears, it is lost to science.

Language is also intimately bound up with culture, so it may be difficult to preserve one without the other. 'If a person shifts from Navajo to English, they lose something,' Mufwene says. 'Moreover, the loss of diversity may also deprive us of different ways of looking at the world,' says Pagel. There is mounting evidence that learning a language produces physiological changes in the brain. 'Your brain and mine are different from the brain of someone who speaks French, for instance,' Pagel says, and this could affect our thoughts and

perceptions. ‘The patterns and connections we make among various concepts may be structured by the linguistic habits of our community.’

So despite linguists’ best efforts, many languages will disappear over the next century. But a growing interest in cultural identity may prevent the direst predictions from coming true. ‘The key to fostering diversity is for people to learn their ancestral tongue, as well as the dominant language,’ says Doug Whalen, founder and president of the Endangered Language Fund in New Haven, Connecticut. ‘Most of these languages will not survive without a large degree of bilingualism,’ he says. In New Zealand, classes for children have slowed the erosion of Maori and rekindled interest in the language. A similar approach in Hawaii has produced about 8,000 new speakers of Polynesian languages in the past few years. In California, ‘apprentice’ programmes have provided life support to several indigenous languages. Volunteer ‘apprentices’ pair up with one of the last living speakers of a Native American tongue to learn a traditional skill such as basket weaving, with instruction exclusively in the endangered language. After about 300 hours of training they are generally sufficiently fluent to transmit the language to the next generation. But Mufwene says that preventing a language dying out is not the same as giving it new life by using it every day. ‘Preserving a language is more like preserving fruits in a jar,’ he says.

However, preservation can bring a language back from the dead. There are examples of languages that have survived in written form and then been revived by later generations. But a written form is essential for this, so the mere possibility of revival has led many speakers of endangered languages to develop systems of writing where none existed before.

### **Questions 1-4**

*Complete the summary below.*

*Choose **NO MORE THAN TWO WORDS** from the passage for each answer.*

*Write your answers in boxes **1-4** on your answer sheet.*

There are currently approximately 6,800 languages in the world. This great variety of languages came about largely as a result of geographical **1**..... . But in today’s world, factors such as government initiatives and **2**..... are contributing to a huge decrease in the number of languages. One factor which may help to ensure that some endangered languages do not die out completely is people’s increasing appreciation of their **3**..... This has been encouraged through programmes of language classes for children and through ‘apprentice’ schemes, in which the endangered language is used as the medium of instruction to teach people a **4**..... . Some speakers of endangered languages have even produced writing systems in order to help secure the survival of their mother tongue.

### **Questions 5-9**

Look at the following statements (Questions 5-9) and the list of people in the box below.

Match each statement with the correct person **A-E**.

Write the appropriate letter **A-E** in boxes 5-9 on your answer sheet.

**NB** You may use any letter more than once.

- A Michael Krauss
- B Salikoko Mufwene
- C Nicholas Ostler
- D Mark Pagel
- E Doug Whalen

5. Endangered languages cannot be saved unless people learn to speak more than one language.
6. Saving languages from extinction is not in itself a satisfactory goal.
7. The way we think may be determined by our language.
8. Young people often reject the established way of life in their community.
9. A change of language may mean a loss of traditional culture.

### **Questions 10-13**

Do the following statements agree with the views of the writer in Reading Passage 1?

In boxes 10-13 on your answer sheet write

**YES** if the statement agrees with the views of the writer

**NO** if the statement contradicts the views of the writer

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

10. The Navajo language will die out because it currently has too few speakers.
11. A large number of native speakers fails to guarantee the survival of a language.
12. National governments could do more to protect endangered languages.
13. The loss of linguistic diversity is inevitable.

## Reading Passage 2

You should spend about 20 minutes on Question 14 - 26, which are based on Reading Passage 2 on the following pages.

### ALTERNATIVE MEDICINE IN AUSTRALIA

*The first students to study alternative medicine at university level in Australia began their four-year, full-time course at the University of Technology, Sydney, in early 1994. Their course covered, among other therapies, acupuncture. The theory they learnt is based on the traditional Chinese explanation of this ancient healing art: that it can regulate the flow of 'Qi' or energy through pathways in the body. This course reflects how far some alternative therapies have come in their struggle for acceptance by the medical establishment.*

Australia has been unusual in the Western world in having a very conservative attitude to natural or alternative therapies, according to Dr Paul Laver, a lecturer in Public Health at the University of Sydney. 'We've had a tradition of doctors being fairly powerful and I guess they are pretty loath to allow any pretenders to their position to come into it.' In many other industrialized countries, orthodox and alternative medicines have worked 'hand in glove' for years. In Europe, only orthodox doctors can prescribe herbal medicine. In Germany, plant remedies account for 10% of the national turnover of pharmaceutical. Americans made more visits to alternative therapist than to orthodox doctors in 1990, and each year they spend about \$US 12 billion on the therapies that have not been scientifically tested.

Disenchantment with orthodox medicine has seen the popularity of alternative therapies in Australia climb steadily during the past 20 years. In a 1983 national health survey, 1.9% of people said they had contacted a chiropractor, naturopath, osteopath, acupuncturist or herbalist in the two weeks prior to the survey. By 1990, this figure had risen to 2.6% of the population. The 550,000 consultations with alternative therapists reported in the 1990 survey represented about an eighth of the total number of consultations with medically qualified personnel covered by the survey, according to Dr Laver and colleagues writing in the Australian Journal of Public Health in 1993. 'A better educated and less accepting public has become disillusioned with the experts in general and increasingly skeptical about science and empirically based knowledge,' they said. 'The high standing of professionals, including doctors, has been eroded as a consequence.'

Rather than resisting or criticizing this trend, increasing numbers of Australian doctors, particularly younger ones, are forming group practices with alternative therapists or taking courses themselves, particularly in acupuncture and herbalism. Part of the incentive was financial, Dr Laver said. 'The bottom line is that most general practitioners are business people. If they see potential clientele going elsewhere, they might want to be able to offer a similar service.'

In 1993, Dr Laver and his colleagues published a survey of 289 Sydney people who attended eight alternative therapists' practices in Sydney. These practices offered a wide range of alternative therapies from 25 therapists. Those surveyed had experience chronic illnesses, for which orthodox medicine had been able to provide little relief. They commented that they liked the holistic approach of their alternative therapists and the friendly, concerned and detailed attention they had received. The cold, impersonal manner of orthodox doctors featured in the survey. An increasing exodus from their clinics, coupled with this and a number of other relevant surveys carried out in Australia, all pointing to orthodox doctors' inadequacies, have led mainstream doctors themselves to begin to admit they could learn from the personal style of alternative therapists. Dr Patrick Store, President of the Royal College of General Practitioners, concurs that orthodox doctors could learn a lot about bedside manner and advising patients on preventative health from alternative therapists.

According to the Australian Journal of Public Health, 18% of patients visiting alternative therapists do so because they suffer from musculo-skeletal complaints; 12% suffer from digestive problems, which is only 1% more than those suffering from emotional problems. Those suffering from respiratory complaints

represent 7% of their patients, and candida sufferers represent an equal percentage. Headache sufferers and those complaining of general ill health represent 6% and 5% of patients respectively, and a further 4% see therapists for general health maintenance.

The survey suggested that complementary medicine is probably a better term than alternative medicine. Alternative medicine appears to be an adjunct, sought in times of disenchantment when conventional medicine seems not to offer the answer.

### **Questions 14 and 15**

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

*Write your answers in boxes 14 and 15 on your answer sheet.*

**14.** Traditionally, how have Australian doctors differed from doctors in many Western countries?

- A.** They have worked closely with pharmaceutical companies.
- B.** They have often worked alongside other therapists.
- C.** They have been reluctant to accept alternative therapists.
- D.** They have regularly prescribed alternative remedies.

**15.** In 1990, Americans

- A.** were prescribed more herbal medicines than in previous years.
- B.** consulted alternative therapists more often than doctors.
- C.** spent more on natural therapies than orthodox medicines.
- D.** made more complaints about doctors than in previous years.

### **Questions 16-23**

*Do the following statements agree with the views of the writer in Reading Passage 2?*

*In boxes 16-23 on your answer sheet write*

**YES** if the statement agrees with the views of the writer

**NO** if the statement contradicts the views of the writer

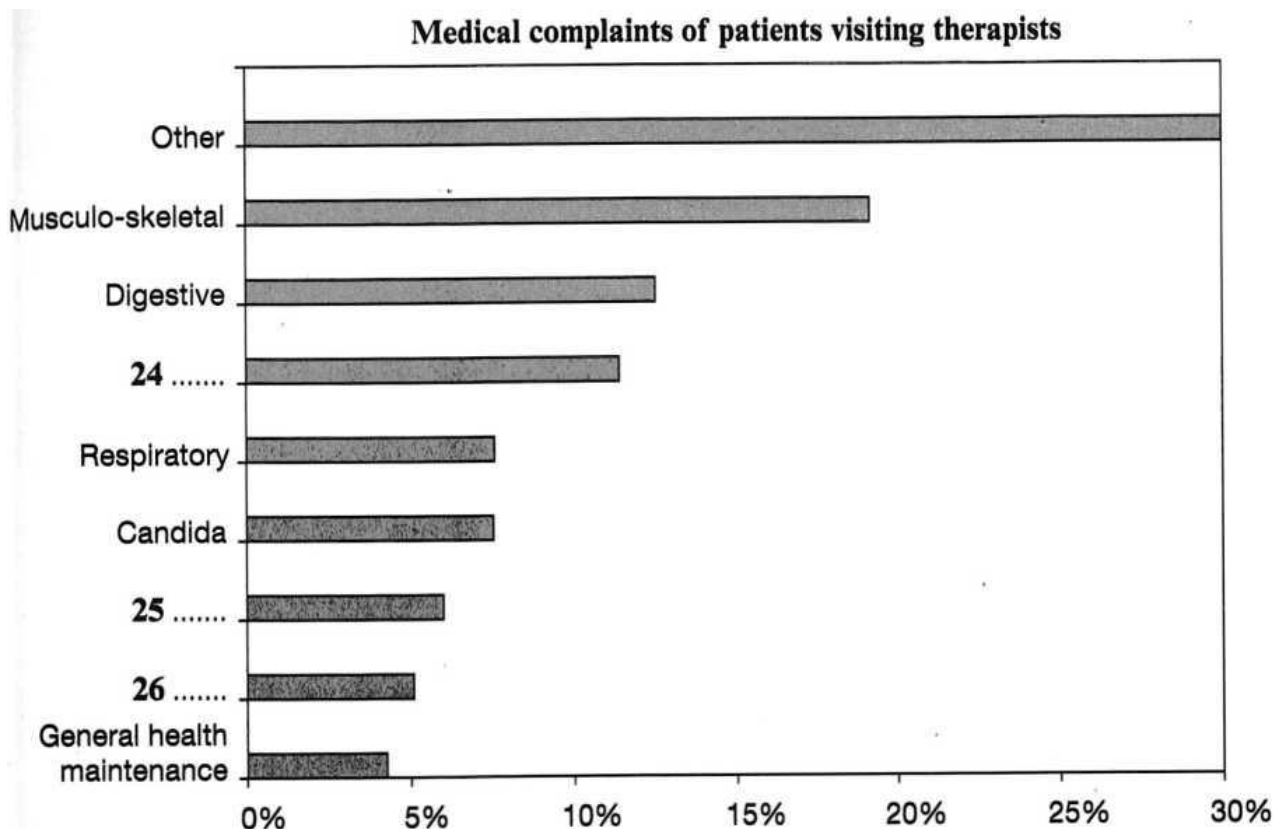
**NOT GIVEN** if it is impossible to say what the writer thinks about this

16. Australians have been turning to alternative therapies in increasing numbers over the past 20 years.
17. Between 1983 and 1990 the numbers of patients visiting alternative therapists rose to include a further 8% of the population.
18. The 1990 survey related to 550,000 consultations with alternative therapists.
19. In the past, Australians had a higher opinion of doctors than they do today.
20. Some Australian doctors are retraining in alternative therapies.
21. Alternative therapists earn higher salaries than doctors.
22. The 1993 Sydney survey involved 289 patients who visited alternative therapists for acupuncture treatment.
23. All the patients in the 1993 Sydney survey had long-term medical complaints.

**Questions 24-26**

Complete the vertical axis on the table below.

Choose **NO MORE THAN THREE WORDS** from Reading Passage 2 for each answer Write your answers in boxes 24-26 on your answer sheet.





## Reading Passage 3

You should spend about 20 minutes on Question 28 - 40, which are based on Reading Passage 3 on the following pages.

# PLAY IS A SERIOUS BUSINESS

*Does play help develop bigger, better brains?*

*Bryant Furlow investigates*

**A.** Playing is a serious business. Children engrossed in a make-believe world, fox cubs play-fighting or kittens teasing a ball of string aren't just having fun. Play may look like a carefree and exuberant way to pass the time before the hard work of adulthood comes along, but there's much more to it than that. For a start, play can even cost animals their lives. Eighty per cent of deaths among juvenile fur seals occur because playing pups fail to spot predators approaching. It is also extremely expensive in terms of energy. Playful young animals use around two or three per cent of their energy cavorting, and in children that figure can be closer to fifteen per cent. 'Even two or three per cent is huge,' says John Byers of Idaho University. 'You just don't find animals wasting energy like that,' he adds. There must be a reason.

**B.** But if play is not simply a developmental hiccup, as biologists once thought, why did it evolve? The latest idea suggests that play has evolved to build big brains. In other words, playing makes you intelligent. Playfulness, it seems, is common only among mammals, although a few of the larger-brained birds also indulge. Animals at play often use unique signs - tail-wagging in dogs, for example - to indicate that activity superficially resembling adult behaviour is not really in earnest. A popular explanation of play has been that it helps juveniles develop the skills they will need to hunt, mate and socialise as adults. Another has been that it allows young animals to get in shape for adult life by improving their respiratory endurance. Both these ideas have been questioned in recent years.

**C.** Take the exercise theory. If play evolved to build muscle or as a kind of endurance training, then you would expect to see permanent benefits. But Byers points out that the benefits of increased exercise disappear rapidly after training stops, so any improvement in endurance resulting from juvenile play would be lost by adulthood. 'If the function of play was to get into shape,' says Byers, 'the optimum time for playing would depend on when it was most advantageous for the young of a particular species to do so. But it doesn't work like that.' Across species, play tends to peak about halfway through the suckling stage and then decline.

**D.** Then there's the skills-training hypothesis. At first glance, playing animals do appear to be practising the complex manoeuvres they will need in adulthood. But a closer inspection reveals this interpretation as too simplistic. In one study, behavioural ecologist Tim Caro, from the University of California, looked at the predatory play of kittens and their predatory behaviour when they reached adulthood. He found that the way the cats played had no significant effect on their hunting prowess in later life.

**E.** Earlier this year, Sergio Pellis of Lethbridge University, Canada, reported that there is a strong positive link between brain size and playfulness among mammals in general. Comparing measurements for fifteen orders of mammal, he and his team found larger brains (for a given body size) are linked to greater playfulness. The converse was also found to be true. Robert Barton of Durham University believes that, because large brains are more sensitive to developmental stimuli than smaller brains, they require more play to help mould them for adulthood. 'I concluded it's to do with learning, and with the importance of environmental data to the brain during development,' he says.

**F.** According to Byers, the timing of the playful stage in young animals provides an important clue to what's going on. If you plot the amount of time a juvenile devotes to play each day over the course of its development, you discover a pattern typically associated with a 'sensitive period' - a brief development window during which the brain can actually be modified in ways that are not possible earlier or later in life. Think of the relative ease with which young children - but not infants or adults - absorb language. Other researchers have

found that play in cats, rats and mice is at its most intense just as this ‘window of opportunity’ reaches its peak.

**G.** ‘People have not paid enough attention to the amount of the brain activated by play,’ says Marc Bekoff from Colorado University. Bekoff studied coyote pups at play and found that the kind of behaviour involved was markedly more variable and unpredictable than that of adults. Such behaviour activates many different parts of the brain, he reasons. Bekoff likens it to a behavioural kaleidoscope, with animals at play jumping rapidly between activities. ‘They use behaviour from a lot of different contexts - predation, aggression, reproduction,’ he says. ‘Their developing brain is getting all sorts of stimulation.’

**H.** Not only is more of the brain involved in play than was suspected, but it also seems to activate higher cognitive processes. ‘There’s enormous cognitive involvement in play,’ says Bekoff. He points out that play often involves complex assessments of playmates, ideas of reciprocity and the use of specialised signals and rules. He believes that play creates a brain that has greater behavioural flexibility and improved potential for learning later in life. The idea is backed up by the work of Stephen Siviy of Gettysburg College. Siviy studied how bouts of play affected the brain’s levels of a particular chemical associated with the stimulation and growth of nerve cells. He was surprised by the extent of the activation. ‘Play just lights everything up,’ he says. By allowing link-ups between brain areas that might not normally communicate with each other, play may enhance creativity.

**I.** What might further experimentation suggest about the way children are raised in many societies today? We already know that rat pups denied the chance to play grow smaller brain components and fail to develop the ability to apply social rules when they interact with their peers. With schooling beginning earlier and becoming increasingly exam-orientated, play is likely to get even less of a look-in. Who knows what the result of that will be?

### **Questions 27-32**

*Reading Passage 3 has nine paragraphs labelled A-I.*

*Which paragraph contains the following information?*

*Write the correct letter A-I in boxes 27-32 on your answer sheet.*

**NB** You may use any letter more than once.

- 27. the way play causes unusual connections in the brain which are beneficial
- 28. insights from recording how much time young animals spend playing
- 29. a description of the physical hazards that can accompany play
- 30. a description of the mental activities which are exercised and developed during play
- 31. the possible effects that a reduction in play opportunities will have on humans
- 32. the classes of animals for which play is important

### **Questions 33-35**

Choose **THREE** letters **A-F**.

Write your answers in boxes 33-35 on your answer sheet.

The list below gives some ways of regarding play.

Which **THREE** ways are mentioned by the writer of the text?

- A. a rehearsal for later adult activities
- B. a method animals use to prove themselves to their peer group
- C. an activity intended to build up strength for adulthood
- D. a means of communicating feelings
- E. a defensive strategy
- F. an activity assisting organ growth

### **Questions 36-40**

Look at the following researchers (Questions 36-40) and the list of findings below.

Match each researcher with the correct finding.

Write the correct letter **A-H** in boxes 36-40 on your answer sheet.

#### **List of Findings**

- A. There is a link between a specific substance in the brain and playing.
- B. Play provides input concerning physical surroundings.
- C. Varieties of play can be matched to different stages of evolutionary history.
- D. There is a tendency for mammals with smaller brains to play less.
- E. Play is not a form of fitness training for the future.
- F. Some species of larger-brained birds engage in play.
- G. A wide range of activities are combined during play.
- H. Play is a method of teaching survival techniques.

**36.** Robert Barton

**37.** Marc Bekoff

**38.** John Byers

**39.** Sergio Pellis

**40.** Steph

## Test 5

### Reading Passage 1

You should spend about 20 minutes on **Questions 1-13**, which are based on **Reading Passage 1** below.

## Cork

Cork - the thick bark of the cork oak tree (*Quercus suber*) - is a remarkable material. It is tough, elastic, buoyant, and fire-resistant, and suitable for a wide range of purposes. It has also been used for millennia: the ancient Egyptians sealed their sarcophagi (stone coffins) with cork, while the ancient Greeks and Romans used it for anything from beehives to sandals.

And the cork oak itself is an extraordinary tree. Its bark grows up to 20 cm in thickness, insulating the tree like a coat wrapped around the trunk and branches and keeping the inside at a constant 20°C all year round. Developed most probably as a defence against forest fires, the bark of the cork oak has a particular cellular structure - with about 40 million cells per cubic centimetre - that technology has never succeeded in replicating. The cells are filled with air, which is why cork is so buoyant. It also has an elasticity that means you can squash it and watch it spring back to its original size and shape when you release the pressure.

Cork oaks grow in a number of Mediterranean countries, including Portugal, Spain, Italy, Greece and Morocco. They flourish in warm, sunny climates where there is a minimum of 400 millimetres of rain per year, and no more than 800 millimetres. Like grape vines, the trees thrive in poor soil, putting down deep root in search of moisture and nutrients. Southern Portugal's Alentejo region meets all of these requirements, which explains why, by the early 20th century, this region had become the world's largest producer of cork, and why today it accounts for roughly half of all cork production around the world.

Most cork forests are family-owned. Many of these family businesses, and indeed many of the trees themselves, are around 200 years old. Cork production is, above all, an exercise in patience. From the planting of a cork sapling to the first harvest takes 25 years, and a gap of approximately a decade must separate harvests from an individual tree. And for top-quality cork, it's necessary to wait a further 15 or 20 years. You even have to wait for the right kind of summer's day to harvest cork. If the bark is stripped on a day when it's too cold - or when the air is damp - the tree will be damaged.

Cork harvesting is a very specialised profession. No mechanical means of stripping cork bark has been invented, so the job is done by teams of highly skilled workers. First, they make vertical cuts down the bark using small sharp axes, then lever it away in pieces as large as they can manage. The most skilful cork-strippers prise away a semi-circular husk that runs the length of the trunk from just above ground level to the first branches. It is then dried on the ground for about four months, before being taken to factories, where it is boiled to kill any insects that might remain in the cork. Over 60% of cork then goes on to be made into traditional bottle stoppers, with most of the remainder being used in the construction trade. Corkboard and cork tiles are ideal for thermal and acoustic insulation, while granules of cork are used in the manufacture of concrete.

Recent years have seen the end of the virtual monopoly of cork as the material for bottle stoppers, due to concerns about the effect it may have on the contents of the bottle. This is caused by a chemical compound called 2,4,6-trichloroanisole (TCA), which forms through the interaction of plant phenols, chlorine and mould. The tiniest concentrations - as little as three or four parts to a trillion - can spoil the taste of the product contained in the bottle. The result has been a gradual yet steady move first towards plastic stoppers and, more recently, to aluminium screw caps. These substitutes are cheaper to manufacture and, in the case of screw caps, more convenient for the user.

The classic cork stopper does have several advantages, however. Firstly, its traditional image is more in keeping with that of the type of high quality goods with which it has long been associated. Secondly - and very importantly - cork is a sustainable product that can be recycled without difficulty. Moreover, cork forests are a resource which support local biodiversity, and prevent desertification in the regions where they are planted. So, given the current concerns about environmental issues, the future of this ancient material once again looks promising.

### **Questions 1-5**

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

*In boxes 1-5 on your answer sheet, write*

**TRUE** if the statement agrees with the information

**FALSE** if the statement contradicts the information

**NOT GIVEN** if there is no information on this

1. The cork oak has the thickest bark of any living tree.
2. Scientists have developed a synthetic cork with the same cellular structure as natural cork.
3. Individual cork oak trees must be left for 25 years between the first and second harvest.
4. Cork bark should be stripped in dry atmospheric conditions.
5. The only way to remove the bark from cork oak trees is by hand.

### **Questions 6-13**

*Complete the notes below.*

*Choose **ONE WORD ONLY** from the passage for each answer.*

*Write your answers in boxes 6-13 on your answer sheet.*

## **Comparison of aluminium screw caps and cork bottle stoppers**

### **Advantages of aluminium screw caps**

- do not affect the **6** ..... of the bottle contents
- are **7** ..... to produce
- are **8** ..... to use

## Advantages of cork bottle stoppers

- suit the **9** ..... of quality products
- made from a **10** ..... material
- easily **11** .....
- cork forests aid **12** .....
- cork forests stop **13** ..... happening

## Reading Passage 2

You should spend about 20 minutes on **Question 14 - 26**, which are based on **Reading Passage 2** on the following pages.

### Collecting as a hobby

*Collecting must be one of the most varied of human activities, and it's one that many of us psychologists find fascinating.*

Many forms of collecting have been dignified with a technical name: an archtophilist collects teddy bears, a philatelist collects postage stamps, and a deltiologist collects postcards. Amassing hundreds or even thousands of postcards, chocolate wrappers or whatever, takes time, energy and money that could surely to much more productive use. And yet there are millions of collectors around the world. Why do they do it?

There are the people who collect because they want to make money - this could be called an instrumental reason for collecting; that is, collecting as a means to an end. They'll look for, say, antiques that they can buy cheaply and expect to be able to sell at a profit. But there may well be a psychological element, too - buying cheap and selling dear can give the collector a sense of triumph. And as selling online is so easy, more and more people are joining in.

Many collectors collect to develop their social life, attending meetings of a group of collectors and exchanging information on items. This is a variant on joining a bridge club or a gym, and similarly brings them into **contact** with like-minded people. Another **motive** for collecting is the desire to find something special, or a particular example of the collected item, such as a rare early recording by a particular singer.

Some may spend their whole lives in a hunt for this. Psychologically, this can give a purpose to a life that otherwise feels aimless.

There is a danger, though, that if the **individual** is ever lucky enough to find what they're looking for, rather than celebrating their success, they may feel empty, now that the goal that drove them on has gone.

If you think about collecting postage stamps another **potential** reason for it - Or, perhaps, a result of collecting is its educational value. Stamp collecting opens a window to other countries, and to the plants, animals, or famous people shown on their stamps.

Similarly, in the 19th century, many collectors amassed fossils, animals and plants from around the **globe**, and their collections provided a vast amount of information about the natural world. Without those collections, our understanding would be greatly inferior to what it is.

In the past - and nowadays, too, though to a lesser extent - a popular form of collecting, particularly among boys and men, was trainspotting. This might involve trying to see every locomotive of a particular type, using published data that identifies each one, and ticking off each engine as it is seen. Train spotters exchange information, these days often by mobile phone, so they can work out where to go to, to see a particular engine. As a by-product, many practitioners of the hobby become very knowledgeable about railway operations, or the technical specifications of different engine types.

Similarly, people who collect dolls may go beyond simply enlarging their collection, and develop an interest in the way that dolls are made, or the materials that are used. These have changed over the centuries from the wood that was standard in 16th century Europe, through the wax and porcelain of later centuries, to the plastics of today's dolls. Or collectors might be inspired to study how dolls reflect notions of what children like, or ought to like.

Not all collectors are interested in learning from their hobby, though, so what we might call a psychological reason for collecting is the need for a sense of control, perhaps as a way of dealing with insecurity. Stamp



collectors, for instance, arrange their stamps in albums, usually very neatly, organizing their collection according to certain commonplace principles-perhaps by country in alphabetical order, or grouping stamps by what they depict -people, birds, maps, and so on.

One reason, conscious or not, for what someone chooses to collect is to show the collector's individualism. Someone who decides to collect something as unexpected as dog collars, for instance, may be conveying their belief that they must be interesting themselves. And believe it or not, there is at least one dog collar museum in existence, and it grew out of a personal collection.

Of course, all hobbies give pleasure, but the common factor in collecting is usually passion: pleasure is putting it far too mildly. More than most other hobbies, collecting can be totally engrossing, and can give a strong sense of personal fulfilment. To non-collectors it may appear an eccentric, if harmless, way of spending time, but potentially, collecting has a lot going for it.

### **Questions 14-21**

*Complete the sentences below.*

*Choose **ONE WORD ONLY** from the passage for each answer.*

*Write your answers in boxes **14-21** on your answer sheet.*

14. The writer mentions collecting ..... as an example of collecting in order to make money.
15. Collectors may get a feeling of ..... from buying and selling items.
16. Collectors' clubs provide opportunities to share .....
17. Collectors' clubs offer ..... with people who have similar interests.
18. Collecting sometimes involves a life-long ..... for a special item.
19. Searching for something particular may prevent people from feeling their life is completely .....
20. Stamp collecting may be ..... because it provides facts about different countries.
21. .... tends to be mostly a male hobby.

## **Questions 22-26**

*Do the following statements agree with the information given in the reading passage?*

*In boxes **22-26** on your answer sheet, write*

**TRUE** if the statement agrees with the information

**FALSE** if the statement contradicts the information

**NOT GIVEN** if there is no information on this

**22.** The number of people buying dolls has grown over the centuries.

**23.** Sixteenth century European dolls were normally made of wax and porcelain.

**24.** Arranging a stamp collection by the size of the stamps is less common than other methods.

**25.** Someone who collects unusual objects may want others to think he or she is also unusual.

**26.** Collecting gives a feeling that other hobbies are unlikely to inspire.

## Reading Passage 3

You should spend about 20 minutes on **Question 28 - 40**, which are based on **Reading Passage 3** on the following pages.

### What's the purpose of gaining knowledge?

**A.** 'I would found an institution where any person can find instruction in any subject' That was the founders motto for Cornell University, and it seems an apt characterization of the different university, also in the USA, where I currently teach philosophy. A student can prepare for a career in resort management, engineering, interior design, accounting, music, law enforcement, you name it. But what would the founders of these two institutions have thought of a course called Arson for Profit? I kid you not: we have it on the books. Any undergraduates who have met the academic requirements can sign up for the course in our program in 'fire science'.

**B.** Naturally, the course is intended for prospective arson investigators, who can learn all the tricks of the trade for detecting whether a fire was deliberately set, discovering who did it, and establishing a chain of evidence for effective prosecution in a court of law. But wouldn't this also be the perfect course for prospective arsonists to sign up for? My point is not to criticize academic programs in fire science: they are highly welcome as part of the increasing professionalization of this and many other occupations. However, it's not unknown for a firefighter to torch a building. This example suggests how dishonest and illegal behavior, with the help of higher education, can creep into every aspect of public and business life.

**C.** I realized this anew when I was invited to speak before a class in marketing, which is another of our degree programs. The regular instructor is a colleague who appreciates the kind of ethical perspective I can bring as a philosopher. There are endless ways I could have approached this assignment, but I took my cue from the title of the course: 'Principles of Marketing'. It made me think to ask the students, 'Is marketing principled?' After all, a subject matter can have principles in the sense of being codified, having rules, as with football or chess, without being principled in the sense of being ethical. Many of the students immediately assumed that the answer to my question about marketing principles was obvious: no. Just look at the ways in which everything under the sun has been marketed; obviously it need not be done in a principled (=ethical) fashion.

**D.** Is that obvious? I made the suggestion, which may sound downright crazy in light of the evidence, that perhaps marketing is by definition principled. My inspiration for this judgement is the philosopher Immanuel Kant, who argued that any body of knowledge consists of an end (or purpose) and a means.

**E.** Let us apply both the terms 'means' and 'end' to marketing. The students have signed up for a course in order to learn how to market effectively. But to what end? There seem to be two main attitudes toward that question. One is that the answer is obvious: the purpose of marketing is to sell things and to make money. The other attitude is that the purpose of marketing is irrelevant: Each person comes to the program and course with his or her own plans, and these need not even concern the acquisition of marketing expertise as such. My proposal, which I believe would also be Kant's, is that neither of these attitudes captures the significance of the end to the means for marketing. A field of knowledge or a professional endeavor is defined by both the means and the end; hence both deserve scrutiny. Students need to study both how to achieve X, and also what X is.

**F.** It is at this point that 'Arson for Profit' becomes supremely relevant. That course is presumably all about means: how to detect and prosecute criminal activity. It is therefore assumed that the end is good in an ethical sense. When I ask fire science students to articulate the end, or purpose, of their field, they eventually generalize to something like, 'The safety and welfare of society,' which seems right. As we have seen, someone could use the very same knowledge of means to achieve a much less noble end, such as personal profit via destructive, dangerous, reckless activity. But we would not call that firefighting. We have a separate word for it: arson. Similarly, if you employed the 'principles of marketing' in an unprincipled way, you would not be doing marketing. We have another term for it: fraud. Kant gives the example of a doctor and a poisoner, who

use the identical knowledge to achieve their divergent ends. We would say that one is practicing medicine, the other, murder.

### **Questions 27-32**

*Reading Passage 3 has six sections, A-F.*

*Choose the correct heading for each section from the list of headings below.*

*Write the correct number, **i-viii**, in boxes **27-32** on your answer sheet.*

**27.** Section A

**28.** Section B

**29.** Section C

**30.** Section D

**31.** Section E

**32.** Section F

#### **List of Headings**

**i.** Courses that require a high level of commitment

**ii.** A course title with two meanings

**iii.** The equal importance of two key issues

**iv.** Applying a theory in an unexpected context

**v.** The financial benefits of studying

**vi.** A surprising course title

**vii.** Different names for different outcomes

**viii.** The possibility of attracting the wrong kind of student

### **Questions 33-36**

Complete the summary below.

Choose **NO MORE THAN TWO WORDS** from the passage for each answer.

Write your answers in boxes **33-36** on your answer sheet.

## **The 'Arson for Profit' course**

This is a university course intended for students who are undergraduates and who are studying **33** ..... . The expectation is that they will become **34** ..... specialising in arson. The course will help them to detect cases of arson and find **35** ..... of criminal intent, leading to successful **36** ..... in the courts.

### **Questions 37-40**

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

In boxes **37-40** on your answer sheet, write

**YES** if the statement agrees with the views of the writer

**NO** if the statement contradicts the views of the writer

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

**37.** It is difficult to attract students onto courses that do not focus on a career.

**38.** The 'Arson for Profit' course would be useful for people intending to set fire to buildings.

**39.** Fire science courses are too academic to help people to be good at the job of firefighting.

**40.** The writer's fire science students provided a detailed definition of the purpose of their studies.

## Test 6

### Reading Passage 1

You should spend about 20 minutes on **Questions 1-13**, which are based on **Reading Passage 1** below.

## The History of Glass

From our earliest origins, man has been making use of glass. Historians have discovered that a type of natural glass - obsidian - formed in places such as the mouth of a volcano as a result of the intense heat of an eruption melting sand - was first used as tips for spears. Archaeologists have even found evidence of man-made glass which dates back to 4000 BC; this took the form of glazes used for coating stone beads. It was not until 1500 BC, however, that the first hollow glass container was made by covering a sand core with a layer of molten glass.

Glass blowing became the most common way to make glass containers from the first century BC. The glass made during this time was highly coloured due to the impurities of the raw material. In the first century AD, methods of creating colourless glass were developed, which was then tinted by the addition of colouring materials. The secret of glass making was taken across Europe by the Romans during this century. However, they guarded the skills and technology required to make glass very closely, and it was not until their empire collapsed in 476 AD that glass-making knowledge became widespread throughout Europe and the Middle East. From the 10th century onwards, the Venetians gained a reputation for technical skill and artistic ability in the making of glass bottles, and many of the city's craftsmen left Italy to set up glassworks throughout Europe.

A major milestone in the history of glass occurred with the invention of lead crystal glass by the English glass manufacturer George Ravenscroft (1632 - 1683). He attempted to counter the effect of clouding that sometimes occurred in blown glass by introducing lead to the raw materials used in the process. The new glass he created was softer and easier to decorate, and had a higher refractive index, adding to its brilliance and beauty, and it proved invaluable to the optical industry. It is thanks to Ravenscroft's invention that optical lenses, astronomical telescopes, microscopes and the like became possible.

In Britain, the modern glass industry only really started to develop after the repeal of the Excise Act in 1845. Before that time, heavy taxes had been placed on the amount of glass melted in a glasshouse, and were levied continuously from 1745 to 1845. Joseph Paxton's Crystal Palace at London's Great Exhibition of 1851 marked the beginning of glass as a material used in the building industry. This revolutionary new building encouraged the use of glass in public, domestic and horticultural architecture. Glass manufacturing techniques also improved with the advancement of science and the development of better technology.

From 1887 onwards, glass making developed from traditional mouth-blowing to a semi-automatic process, after factory-owner HM Ashley introduced a machine capable of producing 200 bottles per hour in Castleford, Yorkshire, England - more than three times quicker than any previous production method. Then in 1907, the first fully automated machine was developed in the USA by Michael Owens - founder of the Owens Bottle Machine Company (later the major manufacturers Owens-Illinois) - and installed in its factory. Owens' invention could produce an impressive 2,500 bottles per hour. Other developments followed rapidly, but it was not until the First World War when Britain became cut off from essential glass suppliers, that glass became part of the scientific sector. Previous to this, glass had been seen as a craft rather than a precise science.

Today, glass making is big business. It has become a modern, hi-tech industry operating in a fiercely competitive global market where quality, design and service levels are critical to maintaining market share.

Modern glass plants are capable of making millions of glass containers a day in many different colours, with green, brown and clear remaining the most popular. Few of us can imagine modern life without glass. It features in almost every aspect of our lives - in our homes, our cars and whenever we sit down to eat or drink. Glass packaging is used for many products, many beverages are sold in glass, as are numerous foodstuffs, as well as medicines and cosmetics.

Glass is an ideal material for recycling, and with growing consumer concern for green issues, glass bottles and jars are becoming ever more popular. Glass recycling is good news for the environment. It saves used glass containers being sent to landfill. As less energy is needed to melt recycled glass than to melt down raw materials, this also saves fuel and production costs. Recycling also reduces the need for raw materials to be quarried, thus saving precious resources.

### **Questions 1-8**

*Complete the notes below.*

*Choose **ONE WORD ONLY** from the passage for each answer.*

*Write your answers in boxes **1-8** on your answer sheet*

#### **The History of Glass**

- Early humans used a material called **1** ..... to make the sharp points of their **2** .....
- 4000 BC: **3** ..... made of stone were covered in a coating of man-made glass.
- First century BC: glass was coloured because of the **4** ..... in the material.
- Until 476 AD: Only the **5** ..... knew how to make glass.
- From 10th century: Venetians became famous for making bottles out of glass.
- 17th century: George Ravenscroft developed a process using **6** ..... to avoid the occurrence of **7** ..... in blown glass.
- Mid-19th century: British glass production developed after changes to laws concerning **8** .....

### **Questions 9-13**

*In boxes **9-13** on your answer sheet, write*

**TRUE** if the statement agrees with the information

**FALSE** if the statement contradicts the information

**NOT GIVEN** if there is no information on this

**9** ..... In 1887, HM Ashley had the fastest bottle-producing machine that existed at the time.

**10** ..... Michael Owens was hired by a large US company to design a fully-automated bottle manufacturing machine for them.

**11** ..... Nowadays, most glass is produced by large international manufacturers.

**12** ..... Concern for the environment is leading to an increased demand for glass containers.

**13** ..... It is more expensive to produce recycled glass than to manufacture new glass.



## Reading Passage 2

You should spend about 20 minutes on **Question 14 - 26**, which are based on **Reading Passage 2** on the following pages.

### Bring back the big cats

It's time to start returning vanished native animals to Britain, says John Vesty. There is a poem, written around 598 AD, which describes hunting a mystery animal called a llewyn. But what was it? Nothing seemed to fit, until 2006, when an animal bone, dating from around the same period, was found in the Kinsey Cave in northern England. Until this discovery, the lynx - a large spotted cat with tassel led ears - was presumed to have died out in Britain at least 6,000 years ago, before the inhabitants of these islands took up farming. But the 2006 find, together with three others in Yorkshire and Scotland, is compelling evidence that the lynx and the mysterious llewyn were in fact one and the same animal. If this is so, it would bring forward the tassel-eared cat's estimated extinction date by roughly 5,000 years.

However, this is not quite the last glimpse of the animal in British culture. A 9th-century stone cross from the Isle of Eigg shows, alongside the deer, boar and aurochs pursued by a mounted hunter, a speckled cat with tasselled ears. Were it not for the animal's backside having worn away with time, we could have been certain, as the lynx's stubby tail is unmistakable. But even without this key feature, it's hard to see what else the creature could have been. The lynx is now becoming the totemic animal of a movement that is transforming British environmentalism: rewilding.

Rewilding means the mass restoration of damaged ecosystems. It involves letting trees return to places that have been denuded, allowing parts of the seabed to recover from trawling and dredging, permitting rivers to flow freely again. Above all, it means bringing back missing species. One of the most striking findings of modern ecology is that ecosystems without large predators behave in completely different ways from those that retain them. Some of them drive dynamic processes that resonate through the whole food chain, creating niches for hundreds of species that might otherwise struggle to survive. The killers turn out to be bringers of life.

Such findings present a big challenge to British conservation, which has often selected arbitrary assemblages of plants and animals and sought, at great effort and expense, to prevent them from changing. It has tried to preserve the living world as if it were a jar of pickles, letting nothing in and nothing out, keeping nature in a state of arrested development. But ecosystems are not merely collections of species; they are also the dynamic and ever-shifting relationships between them. And this dynamism often depends on large predators.

At sea the potential is even greater: by protecting large areas from commercial fishing, we could once more see what 18th-century literature describes: vast shoals of fish being chased by fin and sperm whales, within sight of the English shore. This policy would also greatly boost catches in the surrounding seas; the fishing industry's insistence on scouring every inch of seabed, leaving no breeding reserves, could not be more damaging to its own interests.

Rewilding is a rare example of an environmental movement in which campaigners articulate what they are for rather than only what they are against. One of the reasons why the enthusiasm for rewilding is spreading so quickly in Britain is that it helps to create a more inspiring vision than the green movement's usual promise of 'Follow us and the world will be slightly less awful than it would otherwise have been.'

The lynx presents no threat to human beings: there is no known instance of one preying on people. It is a specialist predator of roe deer, a species that has exploded in Britain in recent decades, holding back, by intensive browsing, attempts to re-establish forests. It will also winkle out sika deer: an exotic species that is almost impossible for human beings to control, as it hides in impenetrable plantations of young trees. The attempt to reintroduce this predator marries well with the aim of bringing forests back to parts of our bare

and barren uplands. The lynx requires deep cover, and as such presents little risk to sheep and other livestock, which are supposed, as a condition of farm subsidies, to be kept out of the woods.

On a recent trip to the Cairngorm Mountains, I heard several conservationists suggest that the lynx could be reintroduced there within 20 years. If trees return to the bare hills elsewhere in Britain, the big cats could soon follow. There is nothing extraordinary about these proposals, seen from the perspective of anywhere else in Europe. The lynx has now been reintroduced to the Jura Mountains, the Alps, the Vosges in eastern France and the Harz mountains in Germany, and has re-established itself in many more places. The European population has tripled since 1970 to roughly 10,000. As with wolves, bears, beavers, boar, bison, moose and many other species, the lynx has been able to spread as farming has, left the hills and people discover that it is more lucrative to protect charismatic wildlife than to hunt it, as tourists will pay for the chance to see it. Large-scale rewilding is happening almost everywhere - except Britain.

Here, attitudes are just beginning to change. Conservationists are starting to accept that the old preservation-jar model is failing, even on its own terms. Already, projects such as Trees for Life in the Highlands provide a hint of what might be coming. An organisation is being set up that will seek to catalyse the rewilding of land and sea across Britain, its aim being to reintroduce that rarest of species to British ecosystems: hope.

### **Questions 14-18**

*Write the correct letter, A, B, C or D, in boxes 14-18 on your answer sheet.*

**14.** What did the 2006 discovery of the animal bone reveal about the lynx?

- A. Its physical appearance was very distinctive.
- B. Its extinction was linked to the spread of farming.
- C. It vanished from Britain several thousand years ago.
- D. It survived in Britain longer than was previously thought.

**15.** What point does the writer make about large predators in the third paragraph?

- A. Their presence can increase biodiversity.
- B. They may cause damage to local ecosystems.
- C. Their behaviour can alter according to the environment.
- D. They should be reintroduced only to areas where they were native.

**16.** What does the writer suggest about British conservation in the fourth paragraph?

- A. It has failed to achieve its aims.
- B. It is beginning to change direction.

C. it has taken a misguided approach.

D. It has focused on the most widespread species.

17. Protecting large areas of the sea from commercial fishing would result in

A. practical benefits for the fishing industry.

B. some short-term losses to the fishing industry.

C. widespread opposition from the fishing industry.

D. certain changes to techniques within the fishing industry.

18. According to the author, what distinguishes rewilding from other environmental campaigns?

A. Its objective is more achievable.

B. Its supporters are more articulate.

C. Its positive message is more appealing.

D. It is based on sounder scientific principles.

### **Questions 19-22**

Complete the summary using the list of words and phrases **A-F** below.

Write the correct letter, **A-F**, in boxes **19-22** on your answer sheet.

### **Reintroducing the lynx to Britain**

There would be many advantages to reintroducing the lynx to Britain. While there is no evidence that the lynx has ever put **19** ..... in danger, it would reduce the numbers of certain **20** ..... whose populations have increased enormously in recent decades. It would present only a minimal threat to **21** ..... , provided these were kept away from lynx habitats. Furthermore, the reintroduction programme would also link efficiently with initiatives to return native **22** ..... to certain areas of the country.

- |                |                       |                 |
|----------------|-----------------------|-----------------|
| A. trees       | B. endangered species | C. hillsides    |
| D. wild animal | E. humans             | F. farm animals |

**Questions 23-26**

*Do the following statements agree with the claims of the writer in Reading Passage 2?*

*In boxes 23-26 on your answer sheet, write*

**YES** *if the statement agrees with the claims of the writer*

**NO** *if the statement contradicts the claims of the writer*

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

**23** ..... Britain could become the first European country to reintroduce the lynx.

**24** ..... The large growth in the European lynx population since 1970 has exceeded conservationists' expectations.

**25** ..... Changes in agricultural practices have extended the habitat of the lynx in Europe.

**26** ..... It has become apparent that species reintroduction has commercial advantages.

## Reading Passage 3

You should spend about 20 minutes on **Question 27 - 40**, which are based on **Reading Passage 3** on the following pages.

### UK companies need more effective boards of directors

**A** After a number of serious failures of governance (that is, how they are managed at the highest level), companies in Britain, as well as elsewhere, should consider radical changes to their directors' roles. It is clear that the role of a board director today is not an easy one. Following the 2008 financial meltdown, which resulted in a deeper and more prolonged period of economic downturn than anyone expected, the search for explanations in the many post-mortems of the crisis has meant blame has been spread far and wide. Governments, regulators, central banks and auditors have all been in the frame. The role of bank directors and management and their widely publicised failures have been extensively picked over and examined in reports, inquiries and commentaries.

**B** The knock-on effect of this scrutiny has been to make the governance of companies in general an issue of intense public debate and has significantly increased the pressures on, and the responsibilities of, directors. At the simplest and most practical level, the time involved in fulfilling the demands of a board directorship has increased significantly, calling into question the effectiveness of the classic model of corporate governance by part-time, independent non-executive directors. Where once a board schedule may have consisted of between eight and ten meetings a year, in many companies the number of events requiring board input and decisions has dramatically risen. Furthermore, the amount of reading and preparation required for each meeting is increasing. Agendas can become overloaded and this can mean the time for constructive debate must necessarily be restricted in favour of getting through the business.

**C** Often, board business is devolved to committees in order to cope with the workload, which may be more efficient but can mean that the board as a whole is less involved in fully addressing some of the most important issues. It is not uncommon for the audit committee meeting to last longer than the main board meeting itself. Process may take the place of discussion and be at the expense of real collaboration, so that boxes are ticked rather than issues tackled.

**D** A radical solution, which may work for some very large companies whose businesses are extensive and complex, is the professional board, whose members would work up to three or four days a week, supported by their own dedicated staff and advisers. There are obvious risks to this and it would be important to establish clear guidelines for such a board to ensure that it did not step on the toes of management by becoming too engaged in the day-to-day running of the company. Problems of recruitment, remuneration and independence could also arise and this structure would not be appropriate for all companies. However, more professional and better-informed boards would have been particularly appropriate for banks where the executives had access to information that part-time non-executive directors lacked, leaving the latter unable to comprehend or anticipate the 2008 crash.

**E** One of the main criticisms of boards and their directors is that they do not focus sufficiently on longer-term matters of strategy, sustainability and governance, but instead concentrate too much on short-term financial metrics. Regulatory requirements and the structure of the market encourage this behaviour. The tyranny of quarterly reporting can distort board decision-making, as directors have to 'make the numbers' every four months to meet the insatiable appetite of the market for more data. This serves to encourage the trading methodology of a certain kind of investor who moves in and out of a stock without engaging in constructive dialogue with the company about strategy or performance, and is simply seeking a short-term financial gain. This effect has been made worse by the changing profile of investors due to the globalisation of capital and the increasing use of automated trading systems. Corporate culture adapts and management teams are largely incentivised to meet financial goals.

**F** Compensation for chief executives has become a combat zone where pitched battles between investors, management and board members are fought, often behind closed doors but increasingly frequently in the full glare of press attention. Many would argue that this is in the interest of transparency and good governance as shareholders use their muscle in the area of pay to pressure boards to remove underperforming chief executives. Their powers to vote down executive remuneration policies increased when binding votes came into force. The chair of the remuneration committee can be an exposed and lonely role, as Alison Carnwath, chair of Barclays Bank's remuneration committee, found when she had to resign, having been roundly criticised for trying to defend the enormous bonus to be paid to the chief executive; the irony being that she was widely understood to have spoken out against it in the privacy of the committee.

**G** The financial crisis stimulated a debate about the role and purpose of the company and a heightened awareness of corporate ethics. Trust in the corporation has been eroded and academics such as Michael Sandel, in his thoughtful and bestselling book *What Money Can't Buy*, are questioning the morality of capitalism and the market economy. Boards of companies in all sectors will need to widen their perspective to encompass these issues and this may involve a realignment of corporate goals. We live in challenging times.

### **Questions 27-33**

*Reading Passage 3 has seven paragraphs, A-G.*

*Choose the correct heading for each paragraph from the list of headings below.*

*Write the correct number, **i-viii**, in boxes **27-33** on your answer sheet.*

27 ..... Paragraph A

28 ..... Paragraph B

29 ..... Paragraph C

30 ..... Paragraph D

31 ..... Paragraph E

32 ..... Paragraph F

33 ..... Paragraph G

#### **List of Headings**

- i** Disputes over financial arrangements regarding senior managers
- ii** The impact on companies of being subjected to close examination
- iii** The possible need for fundamental change in every area of business
- iv** Many external bodies being held responsible for problems
- v** The falling number of board members with broad enough experience
- vi** A risk that not all directors take part in solving major problems
- vii** Boards not looking far enough ahead
- viii** A proposal to change the way the board operates

**Question 34-37**

*Do the following statements agree with the claims of the writer in Reading Passage 3?  
In boxes 34-37 on your answer sheet, write*

**YES** *if the statement agrees with the claims of the writer*

**NO** *if the statement contradicts the claims of the writer*

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

**34** ..... Close scrutiny of the behaviour of boards has increased since the economic downturn.

**35** ..... Banks have been mismanaged to a greater extent than other businesses.

**36** ..... Board meetings normally continue for as long as necessary to debate matters in full.

**37** ..... Using a committee structure would ensure that board members are fully informed about significant issues.

**Questions 38-40**

*Complete the sentences below.*

*Choose **ONE WORD ONLY** from the passage for each answer.*

*Write your answers in boxes **38-40** on your answer sheet.*

**38** Before 2008, non-executive directors were at a disadvantage because of their lack of .....

**39** Boards tend to place too much emphasis on ..... considerations that are only of short-term relevance.

**40** On certain matters, such as pay, the board may have to accept the views of .....

## Test 7

### Reading Passage 1

You should spend about 20 minutes on **Questions 1-13**, which are based on **Reading Passage 1** below.

## The risks agriculture faces in developing countries

### *Synthesis of an online debate*

**A.** Two things distinguish food production from all other productive activities: first, every single person needs food each day and has a right to it; and second, it is hugely dependent on nature. These two unique aspects, one political, the other natural, make food production highly vulnerable and different from any other business. At the same time, cultural values are highly entrenched in food and agricultural systems worldwide.

**B.** Farmers everywhere face major risks; including extreme weather, long-term climate change, and price volatility in input and product markets. However, smallholder farmers in developing countries must in addition deal with adverse environments, both natural, in terms of soil quality, rainfall, etc. and human, in terms of infrastructure, financial systems, markets, knowledge and technology. Counter-intuitively, hunger is prevalent among many smallholder farmers in the developing world.

**C.** Participants in the online debate argued that our biggest challenge is to address the underlying causes of the agricultural system's inability to ensure sufficient food for all, and they identified as drivers of this problem our dependency on fossil fuels and unsupportive government policies.

**D.** On the question of mitigating the risks farmers face, most essayists called for greater state intervention. In his essay, Kanayo F. Nwanze, President of the International Fund for Agricultural Development, argued that governments can significantly reduce risks for farmers by providing basic services like roads to get produce more efficiently to markets, or water and food storage facilities to reduce losses. Sophia Murphy, senior advisor to the Institute for Agriculture and Trade Policy, suggested that the procurement and holding of stocks by governments can also help mitigate wild swings in food prices by alleviating uncertainties about market supply.

**E.** Shenggen Fan, Director General of the International Food Policy Research Institute, held up social safety nets and public welfare programmes in Ethiopia, Brazil and Mexico as valuable ways to address poverty among farming families and reduce their vulnerability to agriculture shocks. However, some commentators responded that cash transfers to poor families do not necessarily translate into increased food security, as these programmes do not always strengthen food production or raise incomes.

Regarding state subsidies for agriculture, Rokeya Kabir, Executive Director of Bangladesh Nari Progati Sangha, commented in her essay that these 'have not compensated for the stranglehold exercised by private traders.

In fact, studies show that sixty percent of beneficiaries of subsidies are not poor, but rich landowners and non-farmer traders.

**F.** Nwanze, Murphy and Fan argued that private risk management tools, like private insurance, commodity futures markets, and rural finance can help small-scale producers mitigate risk and allow for investment in improvements. Kabir warned that financial support schemes often encourage the adoption of high-input agricultural practices, which in the medium term may raise production costs beyond the value of their harvests.

Murphy noted that when futures markets become excessively financialised they can contribute to short-term price volatility, which increases farmers' food insecurity. Many participants and commentators emphasised that greater transparency in markets is needed to mitigate the impact of volatility, and make evident whether



adequate stocks and supplies are available. Others contended that agribusiness companies should be held responsible for paying for negative side effects.

**G.** Many essayists mentioned climate change and its consequences for small-scale agriculture. Fan explained that in addition to reducing crop yields, climate change increases the magnitude and the frequency of extreme weather events, which increase smallholder vulnerability. The growing unpredictability of weather patterns increases farmers' difficulty in managing weather-related risks.

According to this author, one solution would be to develop crop varieties that are more resilient to new climate trends and extreme weather patterns. Accordingly, Pat Mooney, co-founder and executive director of the ETC Group, suggested that 'if we are to survive climate change, we must adopt policies that let peasants diversify the plant and animal species and varieties/breeds that make up our menus.

**H.** Some participating authors and commentators argued in favour of community-based and autonomous risk management strategies through collective action groups, co-operatives or producers' groups. Such groups enhance market opportunities for small-scale producers, reduce marketing costs and synchronise buying and selling with seasonal price conditions.

According to Murphy, 'collective action offers an important way for farmers to strengthen their political and economic bargaining power, and to reduce their business risks. One commentator, Giel Ton, warned that collective action does not come as a free good. It takes time, effort and money to organise, build trust and to experiment. Others, like Marcel Vernooij and Marcel Beukeboom, suggested that in order to 'apply what we already know', all stakeholders, including business, government, scientists and civil society, must work together, starting at the beginning of the value chain.

**I.** Some participants explained that market price volatility is often worsened by the presence of intermediary purchasers who, taking advantage of farmers' vulnerability, dictate prices. One commentator suggested farmers can gain greater control over prices and minimise price volatility by selling directly to consumers.

Similarly, Sonali Bisht, founder and advisor to the Institute of Himalayan Environmental Research and Education (INHERE), India, wrote that copportunity-supported agriculture, where consumers invest in local farmers by subscription and guarantee producers a fair price, is a risk-sharing model worth more attention. Direct food distribution systems not only encourage small-scale agriculture but also give consumers more control over the food they consume, she wrote.

### **Questions 1-3**

*Reading Passage 1 has nine paragraphs, A-I.*

*Which paragraph contains the following information?*

*Write the correct letter, A-I, in boxes 1-3 on your answer sheet.*

1. a reference to characteristics that only apply to food production
2. a reference to challenges faced only by farmers in certain parts of the world
3. a reference to difficulties in bringing about co-operation between farmers

### **Questions 4-9**

Look at the following statements (Questions 4-9) and the list of people below.

Match each statement with the correct person, **A-G**.

Write the correct letter, **A-G**, in boxes 4-9 on your answer sheet.

**NB** You may use any letter **more than once**.

4. Financial assistance from the government does not always go to the farmers who most need it.
5. Farmers can benefit from collaborating as a group.
6. Financial assistance from the government can improve the standard of living of farmers.
7. Farmers may be helped if there is financial input by the same individuals who buy
8. Governments can help to reduce variation in prices.
9. Improvements to infrastructure can have a major impact on risk for farmers. from them

#### **List of People**

- A. Kanayo F. Nwanze
- B. Sophia Murphy
- C. Shenggen Fan
- D. Rokeya Kabir
- E. Pat Mooney
- F. Giel Ton
- G. Sonali Bisht

### **Questions 10-11**

Choose **TWO** letters, **A-E**.

Write the correct letters in boxes **10-11** on your answer sheet.

Which **TWO** problems are mentioned which affect farmers with small farms in developing countries?

- A. lack of demand for locally produced food
- B. lack of irrigation programmes
- C. being unable to get insurance
- D. the effects of changing weather patterns
- E. having to sell their goods to intermediary buyers

### **Questions 12-13**

Choose **TWO** letters, **A-E**.

Write the correct letters in boxes **12-13** on your answer sheet.

Which **TWO** actions are recommended for improving conditions for farmers?

- A. reducing the size of food stocks
- B. attempting to ensure that prices rise at certain times of the year
- C. organising co-operation between a wide range of interested parties
- D. encouraging consumers to take a financial stake in farming
- E. making customers aware of the reasons for changing food prices

## Reading Passage 2

You should spend about 20 minutes on **Question 14 - 26**, which are based on Reading Passage 2 on the following pages.

### The Lost City

#### *An explorer's encounter with the ruined city of Machu Picchu, the most famous icon of the Inca civilisation*

**A.** When the US explorer and academic Hiram Bingham arrived in South America in 1911, he was ready for what was to be the greatest achievement of his life: the exploration of the remote hinterland to the west of Cusco, the old capital of the Inca empire in the Andes mountains of Peru. His goal was to locate the remains of a city called Vitcos, the last capital of the Inca civilisation.

Cusco lies on a high plateau at an elevation of more than 3,000 metres, and Bingham's plan was to descend from this plateau along the valley of the Urubamba river, which takes a circuitous route down to the Amazon and passes through an area of dramatic canyons and mountain ranges.

**B.** When Bingham and his team set off down the Urubamba in late July, they had an advantage over travellers who had preceded them: a track had recently been blasted down the valley canyon to enable rubber to be brought up by mules from the jungle. Almost all previous travellers had left the river at Ollantaytambo and taken a high pass across the mountains to rejoin the river lower down, thereby cutting a substantial corner, but also therefore never passing through the area around Machu Picchu.

**C.** On 24 July they were a few days into their descent of the valley. The day began slowly, with Bingham trying to arrange sufficient mules for the next stage of the trek. His companions showed no interest in accompanying him up the nearby hill to see some ruins that a local farmer, Melchor Arteaga, had told them about the night before. The morning was dull and damp, and Bingham also seems to have been less than keen on the prospect of climbing the hill. In his book *Lost City of the Incas*, he relates that he made the ascent without having the least expectation that he would find anything at the top.

**D.** Bingham writes about the approach in vivid style in his book. First, as he climbs up the hill, he describes the ever-present possibility of deadly snakes, 'capable of making considerable springs when in pursuit of their prey'; not that he sees any. Then there's a sense of mounting discovery as he comes across great sweeps of terraces, then a mausoleum, followed by monumental staircases and, finally, the grand ceremonial buildings of Machu Picchu. 'It seemed like an unbelievable dream the sight held me spellbound', he wrote.

**E.** We should remember, however, that *Lost City of the Incas* is a work of hindsight, not written until 1948, many years after his journey. His journal entries of the time reveal a much more gradual appreciation of his achievement. He spent the afternoon at the ruins noting down the dimensions of some of the buildings, then descended and rejoined his companions, to whom he seems to have said little about his discovery. At this stage, Bingham didn't realise the extent or the importance of the site, nor did he realise what use he could make of the discovery.

**F.** However, soon after returning it occurred to him that he could make a name for himself from this discovery. When he came to write the *National Geographic* magazine article that broke the story to the world in April 1913, he knew he had to produce a big idea.

He wondered whether it could have been the birthplace of the very first Inca, Manco the Great, and whether it could also have been what chroniclers described as 'the last city of the Incas'. This term refers to Vilcabamba the settlement where the Incas had fled from Spanish invaders in the 1530s. Bingham made desperate attempts to prove this belief for nearly 40 years. Sadly, his vision of the site as both the beginning and end of

the Inca civilisation, while a magnificent one, is inaccurate. We now know, that Vilcabamba actually lies 65 kilometres away in the depths of the jungle.

**G.** One question that has perplexed visitors, historians and archaeologists alike ever since Bingham, is why the site seems to have been abandoned before the Spanish Conquest. There are no references to it by any of the Spanish chroniclers - and if they had known of its existence so close to Cusco they would certainly have come in search of gold.

An idea which has gained wide acceptance over the past few years is that Machu Picchu was a moya, a country estate built by an Inca emperor to escape the cold winters of Cusco, where the elite could enjoy monumental architecture and spectacular views. Furthermore, the particular architecture of Machu Picchu suggests that it was constructed at the time of the greatest of all the Incas, the emperor Pachacuti (1438-71). By custom, Pachacuti's descendants built other similar estates for their own use, and so Machu Picchu would have been abandoned after his death, some 50 years before the Spanish Conquest.

### **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-viii**, in boxes **14-20** on your answer sheet.*

**14.** Paragraph A

**15.** Paragraph B

**16.** Paragraph C

**17.** Paragraph D

**18.** Paragraph E

**19.** Paragraph F

**20.** Paragraph G

### **List of Headings**

**i.** Different accounts of the same journey

**ii.** Bingham gains support

**iii.** A common belief

**iv.** The aim of the trip

**v.** A dramatic description

**vi.** A new route

**vii.** Bingham publishes his theory

**viii.** Bingham's lack of enthusiasm

### **Questions 21-24**

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

*In boxes 21-24 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.** Bingham went to South America in search of an Inca city.

**22.** Bingham chose a particular route down the Urubamba valley because it was the most common route used by travellers.

**23.** Bingham understood the significance of Machu Picchu as soon as he saw it.

**24.** Bingham returned to Machu Picchu in order to find evidence to support his theory.

### **Questions 25-26**

*Complete the sentences below.*

*Choose **ONE WORD ONLY** from the passage for each answer.*

*Write your answers in boxes 25-26 on your answer sheet.*

**25.** The track that took Bingham down the Urubamba valley had been created for the transportation of .....

**26.** Bingham found out about the ruins of Machu Picchu from a ..... in the Urubamba valley.

## Reading Passage 3

You should spend about 20 minutes on **Question 27 - 40**, which are based on **Reading Passage 3** on the following pages.

### The Benefits of Being Bilingual

**A.** According to the latest figures, the majority of the world's population is now bilingual or multilingual, having grown up speaking two or more languages. In the past, such children were considered to be at a disadvantage compared with their monolingual peers. Over the past few decades, however, technological advances have allowed researchers to look more deeply at how bilingualism interacts with and changes the cognitive and neurological systems, thereby identifying several clear benefits of being bilingual.

**B.** Research shows that when a bilingual person uses one language, the other is active at the same time. When we hear a word, we don't hear the entire word all at once: the sounds arrive in sequential order. Long before the word is finished, the brain's language system begins to guess what that word might be. If you hear 'can', you will likely activate words like 'candy' and 'candle' as well, at least during the earlier stages of word recognition. For bilingual people, this activation is not limited to a single language; auditory input activates corresponding words regardless of the language to which they belong. Some of the most compelling evidence for this phenomenon, called 'language co-activation', comes from studying eye movements. A Russian-English bilingual asked to 'pick up a marker' from a set of objects would look more at a stamp than someone who doesn't know Russian, because the Russian word for 'stamp', marka, sounds like the English word he or she heard, 'marker'. In cases like this, language co-activation occurs because what the listener hears could map onto words in either language.

**C.** Having to deal with this persistent linguistic competition can result in difficulties, however. For instance, knowing more than one language can cause speakers to name pictures more slowly, and can increase 'tip-of-the-tongue states', when you can almost, but not quite, bring a word to mind. As a result, the constant juggling of two languages creates a need to control how much a person accesses a language at any given time. For this reason, bilingual people often perform better on tasks that require conflict management. In the classic Stroop Task, people see a word and are asked to name the colour of the word's font. When the colour and the word match (i., the word 'red' printed in red), people correctly name the colour more quickly than when the colour and the word don't match (i., the word 'red' printed in blue). This occurs because the word itself ('red') and its font colour (blue) conflict. Bilingual people often excel at tasks such as this, which tap into the ability to ignore competing perceptual information and focus on the relevant aspects of the input. Bilinguals are also better at switching between two tasks; for example, when bilinguals have to switch from categorizing objects by colour (red or green) to categorizing them by shape (circle or triangle), they do so more quickly than monolingual people, reflecting better cognitive control when having to make rapid changes of strategy.

**D.** It also seems that the neurological roots of the bilingual advantage extend to brain areas more traditionally associated with sensory processing. When monolingual and bilingual adolescents listen to simple speech sounds without any intervening background noise, they show highly similar brain stem responses. When researchers play the same sound to both groups in the presence of background noise, however, the bilingual listeners' neural response is considerably larger, reflecting better encoding of the sound's fundamental frequency, a feature of sound closely related to pitch perception.

**E.** Such improvements in cognitive and sensory processing may help a bilingual person to process information in the environment, and help explain why bilingual adults acquire a third language better than monolingual adults master a second language. This advantage may be rooted in the skill of focussing on information about the new language while reducing interference from the languages they already know.

**F.** Research also indicates that bilingual experience may help to keep the cognitive mechanisms sharp by recruiting alternate brain networks to compensate for those that become damaged during aging. Older bilinguals enjoy improved memory relative to monolingual people, which can lead to real-world health benefits. In a study of over 200 patients with Alzheimer's disease, a degenerative brain disease, bilingual

patients reported showing initial symptoms of the disease an average of five years later than monolingual patients. In a follow-up study, researchers compared the brains of bilingual and monolingual patients matched on the severity of Alzheimer's symptoms. Surprisingly, the bilinguals' brains had more physical signs of disease than their monolingual counterparts, even though their outward behaviour and abilities were the same. If the brain is an engine, bilingualism may help it to go farther on the same amount of fuel.

**G.** Furthermore, the benefits associated with bilingual experience seem to start very early. In one study, researchers taught seven-month-old babies growing up in monolingual or bilingual homes that when they heard a tinkling sound, a puppet appeared on one side of a screen. Halfway through the study, the puppet began appearing on the opposite side of the screen. In order to get a reward, the infants had to adjust the rule they'd learned; only the bilingual babies were able to successfully learn the new rule. This suggests that for very young children, as well as for older people, navigating a multilingual environment imparts advantages that transfer far beyond language.

### **Questions 27-31**

Complete the table below.

Choose **NO MORE THAN TWO WORDS** from the passage for each answer.

Write your answers in boxes **27-31** on your answer sheet.

#### **Test**

Observing the **27** ..... of Russian- English bilingual people when asked to select certain objects  
A test called the **29** ....., focusing on naming colours  
A test involving switching between tasks

#### **Findings**

Bilingual people engage both languages simultaneously: a mechanism known as **28** .....  
Bilingual people are more able to handle tasks involving a skill called **30** .....  
When changing strategies, bilingual people have superior **31** .....

### **Questions 32-36**

Do the following statements agree with the claims of the writer in Reading Passage 3?

In boxes **32-36** on your answer sheet, write

**YES** if the statement agrees with the claims of the writer

**NO** if the statement contradicts the claims of the writer

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

**32.** Attitudes towards bilingualism have changed in recent years.

**33.** Bilingual people are better than monolingual people at guessing correctly what words are before they are finished.

**34.** Bilingual people consistently name images faster than monolingual people.

**35.** Bilingual people's brains process single sounds more efficiently than monolingual people in all situations.

**36.** Fewer bilingual people than monolingual people suffer from brain disease in old age.



### **Questions 37-40**

*Reading Passage 3 has seven paragraphs, A-G.*

*Which paragraph contains the following information?*

*Write the correct letter, A-G, in boxes 37-40 on your answer sheet.*

**37.** an example of how bilingual and monolingual people's brains respond differently to a certain type of non-verbal auditory input

**38.** a demonstration of how a bilingual upbringing has benefits even before we learn to speak

**39.** a description of the process by which people identify words that they hear

**40.** reference to some negative consequences of being bilingual

## Test 8

### Reading Passage 1

You should spend about 20 minutes on **Questions 1-13**, which are based on **Reading Passage 1** below.

## Advantages of public transport

A new study conducted for the World Bank by Murdoch University's Institute for Science and Technology Policy (ISTP) has demonstrated that public transport is more efficient than cars. The study compared the proportion of wealth poured into transport by thirty-seven cities around the world. This included both the public and private costs of building, maintaining and using a transport system.

The study found that the Western Australian city of Perth is a good example of a city with minimal public transport. As a result, 17% of its wealth went into transport costs. Some European and Asian cities, on the other hand, spent as little as 5%. Professor Peter Newman, ISTP Director, pointed out that these more efficient cities were able to put the difference into attracting industry and jobs or creating a better place to live.

According to Professor Newman, the larger Australian city of Melbourne is a rather unusual city in this sort of comparison. He describes it as two cities: 'A European city surrounded by a car-dependent one'. Melbourne's large tram network has made car use in the inner city much lower, but the outer suburbs have the same car-based structure as most other Australian cities. The explosion in demand for accommodation in the inner suburbs of Melbourne suggests a recent change in many people's preferences as to where they live.

Newman says this is a new, broader way of considering public transport issues. In the past, the case for public transport has been made on the basis of environmental and social justice considerations rather than economics. Newman, however, believes the study demonstrates that 'the auto-dependent city model is inefficient and grossly inadequate in economic as well as environmental terms'.

Bicycle use was not included in the study but Newman noted that the two most 'bicycle friendly' cities considered - Amsterdam and Copenhagen - were very efficient, even though their public transport systems were 'reasonable but not special'.

It is common for supporters of road networks to reject the models of cities with good public transport by arguing that such systems would not work in their particular city. One objection is climate. Some people say their city could not make more use of public transport because it is either too hot or too cold. Newman rejects this, pointing out that public transport has been successful in both Toronto and Singapore and, in fact, he has checked the use of cars against climate and found 'zero correlation'.

When it comes to other physical features, road lobbies are on stronger ground. For example, Newman accepts it would be hard for a city as hilly as Auckland to develop a really good rail network. However, he points out that both Hong Kong and Zurich have managed to make a success of their rail systems, heavy and light respectively, though there are few cities in the world as hilly.

**A.** In fact, Newman believes the main reason for adopting one sort of transport over another is politics: 'The more democratic the process, the more public transport is favored.' He considers Portland, Oregon, a perfect example of this. Some years ago, federal money was granted to build a new road. However, local pressure groups forced a referendum over whether to spend the money on light rail instead. The rail proposal won and the railway worked spectacularly well. In the years that have followed, more and more rail systems have been put in, dramatically changing the nature of the city. Newman notes that Portland has about the same population as Perth and had a similar population density at the time.

**B.** In the UK, travel times to work had been stable for at least six centuries, with people avoiding situations that required them to spend more than half an hour travelling to work. Trains and cars initially allowed people to live at greater distances without taking longer to reach their destination. However, public infrastructure did not keep pace with urban sprawl, causing massive congestion problems which now make commuting times far higher.

**C.** There is a widespread belief that increasing wealth encourages people to live farther out where cars are the only viable transport. The example of European cities refutes that. They are often wealthier than their American counterparts but have not generated the same level of car use. In Stockholm, car use has actually fallen in recent years as the city has become larger and wealthier. A new study makes this point even more starkly. Developing cities in Asia, such as Jakarta and Bangkok, make more use of the car than wealthy Asian cities such as Tokyo and Singapore. In cities that developed later, the World Bank and Asian Development Bank discouraged the building of public transport and people have been forced to rely on cars -creating the massive traffic jams that characterize those cities.

**D.** Newman believes one of the best studies on how cities built for cars might be converted to rail use is The Urban Village report, which used Melbourne as an example. It found that pushing everyone into the city centre was not the best approach. Instead, the proposal advocated the creation of urban villages at hundreds of sites, mostly around railway stations.

**E.** It was once assumed that improvements in telecommunications would lead to more dispersal in the population as people were no longer forced into cities. However, the ISTP team's research demonstrates that the population and job density of cities rose or remained constant in the 1980s after decades of decline. The explanation for this seems to be that it is valuable to place people working in related fields together. 'The new world will largely depend on human creativity, and creativity flourishes where people come together face-to-face.'

### **Questions 1-5**

*Reading Passage 1 has five marked paragraphs, A-E.*

*Choose the correct heading for each paragraph from the list of headings below.*

*Write the correct number, i-viii, in boxes 1-5 on your answer sheet.*

#### **List of Headings**

- i.** Avoiding an overcrowded centre
- ii.** A successful exercise in people power
- iii.** The benefits of working together in cities
- iv.** Higher incomes need not mean more cars
- v.** Economic arguments fail to persuade
- vi.** The impact of telecommunications on population distribution

**vii.** Increases in travelling time

**viii.** Responding to arguments against public transport

**1.** Paragraph A

**2.** Paragraph B

**3.** Paragraph C

**4.** Paragraph D

**5.** Paragraph E

**Questions 6-10**

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

*In boxes 6-10 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

**6.** The ISTP study examined public and private systems in every city of the world.

**7.** Efficient cities can improve the quality of life for their inhabitants.

**8.** An inner-city tram network is dangerous for car drivers.

**9.** In Melbourne, people prefer to live in the outer suburbs.

**10.** Cities with high levels of bicycle usage can be efficient even when public transport is only averagely good.

### **Questions 11-13**

*Look at the following cities ( Questions 11-13) and the list of descriptions below.*

*Match each city with the correct description, **A-F**.*

*Write the correct letter, **A-F**, in boxes 11-13 on your answer sheet.*

#### **List of Descriptions**

- A.** successfully uses a light rail transport system in hilly environment
- B.** successful public transport system despite cold winters
- C.** profitably moved from road to light rail transport system
- D.** hilly and inappropriate for rail transport system
- E.** heavily dependent on cars despite widespread poverty
- F.** inefficient due to a limited public transport system

**11.** Perth

**12.** Auckland

**13.** Portland

## Reading Passage 2

You should spend about 20 minutes on **Question 14 - 26**, which are based on **Reading Passage 2** on the following pages.

### GREYING POPULATION STAYS IN THE PINK

Elderly people are growing healthier, happier and more independent, say American scientists. The results of a 14-year study to be announced later this month reveal that the diseases associated with old age are afflicting fewer and fewer people and when they do strike, it is much later in life.

In the last 14 years, the National Long-term Health Care Survey has gathered data on the health and lifestyles of more than 20,000 men and women over 65. Researchers, now analysing the results of data gathered in 1994, say arthritis, high blood pressure and circulation problems - the major medical complaints in this age group - are troubling a smaller proportion every year. And the data confirms that the rate at which these diseases are declining continues to accelerate. Other diseases of old age - dementia, stroke, arteriosclerosis and emphysema - are also troubling fewer and fewer people.

'It really raises the question of what should be considered normal ageing,' says Kenneth Manton, a demographer from Duke University in North Carolina. He says the problems doctors accepted as normal in a 65-year-old in 1982 are often not appearing until people are 70 or 75.

Clearly, certain diseases are beating a retreat in the face of medical advances. But there may be other contributing factors. Improvements in childhood nutrition in the first quarter of the twentieth century, for example, gave today's elderly people a better start in life than their predecessors.

On the downside, the data also reveals failures in public health that have caused surges in some illnesses. An increase in some cancers and bronchitis may reflect changing smoking habits and poorer air quality, say the researchers. 'These may be subtle influences,' says Manton, 'but our subjects have been exposed to worse and worse pollution for over 60 years. It's not surprising we see some effect.'

One interesting correlation Manton uncovered is that better-educated people are likely to live longer. For example, 65-year-old women with fewer than eight years of schooling are expected, on average, to live to 82. Those who continued their education live an extra seven years. Although some of this can be attributed to a higher income, Manton believes it is mainly because educated people seek more medical attention.

The survey also assessed how independent people over 65 were, and again found a striking trend. Almost 80% of those in the 1994 survey could complete everyday activities ranging from eating and dressing unaided to complex tasks such as cooking and managing their finances. That represents a significant drop in the number of disabled old people in the population. If the trends apparent in the United States 14 years ago had continued,

researchers calculate there would be an additional one million disabled elderly people in today's population. According to Manton, slowing the trend has saved the United States government's Medicare system more than \$200 billion, suggesting that the greying of America's population may prove less of a financial burden than expected.

The increasing self-reliance of many elderly people is probably linked to a massive increase in the use of simple home medical aids. For instance, the use of raised toilet seats has more than doubled since the start of the study, and the use of bath seats has grown by more than 50%. These developments also bring some health benefits, according to a report from the MacArthur Foundation's research group on successful ageing. The group found that those elderly people who were able to retain a sense of independence were more likely to stay healthy in old age.

Maintaining a level of daily physical activity may help mental functioning, says Carl Cotman, a neuroscientist at the University of California at Irvine. He found that rats that exercise on a treadmill have raised levels of brain-derived neurotrophic factor coursing through their brains. Cotman believes this hormone, which keeps neurons functioning, may prevent the brains of active humans from deteriorating.

As part of the same study, Teresa Seeman, a social epidemiologist at the University of Southern California in Los Angeles, found a connection between self-esteem and stress in people over 70. In laboratory simulations of challenging activities such as driving, those who felt in control of their lives pumped out lower levels of stress hormones such as cortisol. Chronically high levels of these hormones have been linked to heart disease.

But independence can have drawbacks. Seeman found that elderly people who felt emotionally isolated maintained higher levels of stress hormones even when asleep. The research suggests that older people fare best when they feel independent but know they can get help when they need it.

'Like much research into ageing, these results support common sense,' says Seeman. They also show that we may be underestimating the impact of these simple factors. 'The sort of thing that your grandmother always told you turns out to be right on target,' she says.

### **Questions 14-22**

Complete the summary using the list of words, **A-Q**, below.

Write the correct letter, **A-Q**, in boxes 14-22 on your answer sheet.

Research carried out by scientists in the United States has shown that the proportion of people over 65 suffering from the most common age-related medical problems is **14** ..... and that the speed of this change is **15** .....

It also seems that these diseases are affecting people **16** ..... in life than they did in the past.

This is largely due to developments in **17** ..... but other factors such as improved **18** ..... may also be playing a part.

Increases in some other illnesses may be due to changes in personal habits and to **19** .....

The research establishes a link between levels of **20** ..... and life expectancy.

It also shows that there has been a considerable reduction in the number of elderly people who are **21** ..... which means that the **22** ..... involved in supporting this section of the population may be less than previously predicted.

**A.** cost **B.** falling **C.** technology

**D.** undernourished **E.** earlier **F.** later

**G.** disabled **H.** more **I.** increasing **J.** nutrition

**K.** education **L.** constant **M.** medicine **N.** pollution

**O.** environmental **P.** health **Q.** independent

### **Questions 23-26**

*Complete each sentence with the correct ending, A-H, below.*

*Write the correct letter, A-H, in boxes 23-26 on your answer sheet.*

- A. may cause heart disease.
- B. can be helped by hormone treatment.
- C. may cause rises in levels of stress hormones.
- D. have cost the United States government more than \$200 billion.
- E. may help prevent mental decline.
- F. may get stronger at night.
- G. allow old people to be more independent.
- H. can reduce stress in difficult situations.

23. Home medical aids.

24. Regular amounts of exercise

25. Feelings of control over life

26. Feelings of loneliness



## Reading Passage 3

You should spend about 20 minutes on **Questions 27-40** which are based on **Reading Passage 3** below.

### Numeration

One of the first great intellectual feats of a young child is learning how to talk, closely followed by learning how to count. From earliest childhood we are so bound up with our system of numeration that it is a feat of imagination to consider the problems faced by early humans who had not yet developed this facility. Careful consideration of our system of numeration leads to the conviction that, rather than being a facility that comes naturally to a person, it is one of the great and remarkable achievements of the human race.

It is impossible to learn the sequence of events that led to our developing the concept of number. Even the earliest of tribes had a system of numeration that, if not advanced, was sufficient for the tasks that they had to perform. Our ancestors had little use for actual numbers; instead their considerations would have been more of the kind *Is this enough?* rather than *How many?* when they were engaged in food gathering, for example. However, when early humans first began to reflect on the nature of things around them, they discovered that they needed an idea of number simply to keep their thoughts in order. As they began to settle, grow plants and herd animals, the need for a sophisticated number system became paramount. It will never be known how and when this numeration ability developed, but it is certain that numeration was well developed by the time humans had formed even semi-permanent settlements.

Evidence of early stages of arithmetic and numeration can be readily found. The indigenous peoples of Tasmania were only able to count one, two, many; those of South Africa counted one, two, two and one, two twos, two twos and one, and so on. But in real situations the number and words are often accompanied by gestures to help resolve any confusion. For example, when using the one, two, many type of system, the word many would mean, look at my hands and see how many fingers I am showing you. This basic approach is limited in the range of numbers that it can express, but this range will generally suffice when dealing with the simpler aspects of human existence.

The lack of ability of some cultures to deal with large numbers is not really surprising. European languages, when traced back to their earlier version, are very poor in number words and expressions. The ancient Gothic word for ten, tachund, is used to express the number 100 as tachund tachund. By the seventh century, the word teon had become interchangeable with the tachund or hund of the Anglo-Saxon language, and so 100 was denoted as hund leonlig, or ten times ten. The average person in the seventh century in Europe was not as familiar with numbers as we are today. In fact, to qualify as a witness in a court of law a man had to be able to count to nine!

Perhaps the most fundamental step in developing a sense of number is not the ability to count, but rather to see that a number is really an abstract idea instead of a simple attachment to a group of particular objects. It must have been within the grasp of the earliest humans to conceive that four birds are distinct from two birds; however, it is not an elementary step to associate the number 4, as connected with four birds, to the number 4, as connected with four rocks. Associating a number as one of the qualities of a specific object is a great hindrance to the development of a true number sense. When the number 4 can be registered in the mind as a specific word, independent of the object being referenced, the individual is ready to take the first step toward the development of a notational system for numbers and, from there, to arithmetic.

Traces of the very first stages in the development of numeration can be seen in several living languages today. The numeration system of the Tsimshian language in British Columbia contains seven distinct sets of words for numbers according to the class of the item being counted: for counting flat objects and animals, for round objects and time, for people, for long objects and trees, for canoes, for measures, and for counting when no particular object is being numerated. It seems that the last is a later development while the first six groups show the relics of an older system. This diversity of number names can also be found in some widely used languages such as Japanese.

Intermixed with the development of a number sense is the development of an ability to count. Counting is not directly related to the formation of a number concept because it is possible to count by matching the items being counted against a group of pebbles, grains of corn, or the counter's fingers. These aids would have been indispensable to very early people who would have found the process impossible without some form of mechanical aid. Such aids, while different, are still used even by the most educated in today's society due to their convenience.

All counting ultimately involves reference to something other than the things being counted. At first it may have been grains or pebbles but now it is a memorized sequence of words that happen to be the names of the numbers.

### **Questions 27-31**

*Complete each sentence with the correct ending. A-G, below.*

*Write the correct letter, A-G, in boxes 27-31 on your answer sheet.*

- A. was necessary in order to fulfil a civic role.
  - B. was necessary when people began farming.
  - C. was necessary for the development of arithmetic.
  - D. persists in all societies.
  - E. was used when the range of number words was restricted.
  - F. can be traced back to early European languages.
  - G. was a characteristic of early numeration systems.
27. A developed system of numbering
28. An additional hand signal
29. In seventh-century Europe, the ability to count to a certain number
30. Thinking about numbers as concepts separate from physical objects
31. Expressing number differently according to class of item

### **Questions 32-40**

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

*In boxes 32-40 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

- 32.** For the earliest tribes, the concept of sufficiency was more important than the concept of quantity.
- 33.** Indigenous Tasmanians used only four terms to indicate numbers of objects.
- 34.** Some peoples with simple number systems use body language to prevent misunderstanding of expressions of number.
- 35.** All cultures have been able to express large numbers clearly.
- 36.** The word ‘thousand’ has Anglo-Saxon origins.
- 37.** In general, people in seventh-century Europe had poor counting ability.
- 38.** In the Tsimshian language, the number for long objects and canoes is expressed with the same word.
- 39.** The Tsimshian language contains both older and newer systems of counting.
- 40.** Early peoples found it easier to count by using their fingers rather than a group of pebbles.

## Test 9

### Reading Passage 1

You should spend about 20 minutes on **Questions 1-13**, which are based on **Reading Passage 1** below.

## Doctoring sales

*Pharmaceuticals is one of the most profitable industries in North America. But do the drugs industry's sales and marketing strategies go too far?*

**A.** A few months ago Kim Schaefer, sales representative of a major global pharmaceutical company, walked into a medical center in New York to bring information and free samples of her company's latest products. That day she was lucky - a doctor was available to see her. 'The last rep offered me a trip to Florida. What do you have?' the physician asked. He was only half joking.

**B.** What was on offer that day was a pair of tickets for a New York musical. But on any given day, what Schaefer can offer is typical for today's drugs rep - a car trunk full of promotional gifts and gadgets, a budget that could buy lunches and dinners for a small country, hundreds of free drug samples and the freedom to give a physician \$200 to prescribe her new product to the next six patients who fit the drug's profile. And she also has a few \$ 1,000 honoraria to offer in exchange for doctors' attendance at her company's next educational lecture.

**C.** Selling pharmaceuticals is a daily exercise in ethical judgement. Salespeople like Schaefer walk the line between the common practice of buying a prospect's time with a free meal, and bribing doctors to prescribe their drugs. They work in an industry highly criticized for its sales and marketing practices, but find themselves in the middle of the age-old chicken-or-egg question - businesses won't use strategies that don't work, so are doctors to blame for the escalating extravagance of pharmaceutical marketing? Or is it the industry's responsibility to decide the boundaries?

**D.** The explosion in the sheer number of salespeople in the field - and the amount of funding used to promote their causes - forces close examination of the pressures, influences and relationships between drug reps and doctors. Salespeople provide much-needed information and education to physicians. In many cases the glossy brochures, article reprints and prescriptions they deliver are primary sources of drug education for healthcare givers. With the huge investment the industry has placed in face-to-face selling, salespeople have essentially become specialists in one drug or group of drugs - a tremendous advantage in getting the attention of busy doctors in need of quick information.

**E.** But the sales push rarely stops in the office. The flashy brochures and pamphlets left by the sales reps are often followed up with meals at expensive restaurants, meetings in warm and sunny places, and an inundation of promotional gadgets. Rarely do patients watch a doctor write with a pen that isn't emblazoned with a drug's name, or see a nurse use a tablet not bearing a pharmaceutical company's logo. Millions of dollars are spent by pharmaceutical companies on promotional products like coffee mugs, shirts, umbrellas, and golf balls. Money well spent? It's hard to tell. 'I've been the recipient of golf balls from one company and I use them, but it doesn't make me prescribe their medicine,' says one doctor. 'I tend to think I'm not influenced by what they give me.'

**F.** Free samples of new and expensive drugs might be the single most effective way of getting doctors and patients to become loyal to a product. Salespeople hand out hundreds of dollars' worth of samples each week - \$7.2 billion worth of them in one year. Though few comprehensive studies have been conducted, one by the University of Washington investigated how drug sample availability affected what physicians prescribe. A total of 131 doctors self-reported their prescribing patterns - the conclusion was that the availability of samples led them to dispense and prescribe drugs that differed from their preferred drug choice.

**G.** The bottom line is that pharmaceutical companies as a whole invest more in marketing than they do in research and development. And patients are the ones who pay - in the form of sky-rocketing prescription prices - for every pen that's handed out, every free theatre ticket, and every steak dinner eaten. In the end the fact remains that pharmaceutical companies have every right to make a profit and will continue to find new ways to increase sales. But as the medical world continues to grapple with what's acceptable and what's not, it is clear that companies must continue to be heavily scrutinized for their sales and marketing strategies.

### **Questions 1-7**

*Reading Passage 1 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 1-7 on your answer sheet.*

#### **List of Headings**

- i.** Not all doctors are persuaded
  - ii.** Choosing the best offers
  - iii.** Who is responsible for the increase in promotions?
  - iv.** Fighting the drug companies
  - v.** An example of what doctors expect from drug companies
  - vi.** Gifts include financial incentives
  - vii.** Research shows that promotion works
  - viii.** The high costs of research
  - ix.** The positive side of drugs promotion
  - x.** Who really pays for doctors' free gifts?
- 1.** Paragraph A
  - 2.** Paragraph B
  - 3.** Paragraph C
  - 4.** Paragraph D
  - 5.** Paragraph E
  - 6.** Paragraph F
  - 7.** Paragraph G

### **Questions 8-13**

*Do the following statements agree with the views of the writer in Reading Passage 1?*

*In boxes 8-13 on your answer sheet, write*

**YES** *if the statement agrees with the views of the writer*

**NO** *if the statement contradicts the views of the writer*

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

8. Sales representatives like Kim Schaefer work to a very limited budget.
9. Kim Schaefer's marketing technique may be open to criticism on moral grounds.
10. The information provided by drug companies is of little use to doctors.
11. Evidence of drug promotion is clearly visible in the healthcare environment.
12. The drug companies may give free drug samples to patients without doctors' prescriptions.
13. It is legitimate for drug companies to make money.

## Reading Passage 2

You should spend about 20 minutes on **Question 14 - 26**, which are based on **Reading Passage 2** on the following pages.

### Do literate women make better mothers?

Children in developing countries are healthier and more likely to survive past the age of five when their mothers can read and write. Experts in public health accepted this idea decades ago, but until now no one has been able to show that a woman's ability to read in itself improves her children's chances of survival.

Most literate women learnt to read in primary school, and the fact that a woman has had an education may simply indicate her family's wealth or that it values its children more highly. Now a long-term study carried out in Nicaragua has eliminated these factors by showing that teaching reading to poor adult women, who would otherwise have remained illiterate, has a direct effect on their children's health and survival.

In 1979, the government of Nicaragua established a number of social programmes, including a National Literacy Crusade. By 1985, about 300,000 illiterate adults from all over the country, many of whom had never attended primary school, had learnt how to read, write and use numbers.

During this period, researchers from the Liverpool School of Tropical Medicine, the Central American Institute of Health in Nicaragua, the National Autonomous University of Nicaragua and the Costa Rican Institute of Health interviewed nearly 3,000 women, some of whom had learnt to read as children, some during the literacy crusade and some who had never learnt at all. The women were asked how many children they had given birth to and how many of them had died in infancy. The research teams also examined the surviving children to find out how well-nourished they were.

The investigators' findings were striking. In the late 1970s, the infant mortality rate for the children of illiterate mothers was around 110 deaths per thousand live births. At this point in their lives, those mothers who later went on to learn to read had a similar level of child mortality (105/1000). For women educated in primary school, however, the infant mortality rate was significantly lower, at 80 per thousand.

In 1985, after the National Literacy Crusade had ended, the infant mortality figures for those who remained illiterate and for those educated in primary school remained more or less unchanged. For those women who learnt to read through the campaign, the infant mortality rate was 84 per thousand, an impressive 21 points lower than for those women who were still illiterate. The children of the newly-literate mothers were also better nourished than those of women who could not read.

Why are the children of literate mothers better off? According to Peter Sandiford of the Liverpool School of Tropical Medicine, no one knows for certain. Child health was not on the curriculum during the women's lessons, so he and his colleagues are looking at other factors. They are working with the same group of 3,000 women, to try to find out whether reading mothers make better use of hospitals and clinics, opt for smaller families, exert more control at home, learn modern childcare techniques more quickly, or whether they merely have more respect for themselves and their children.

The Nicaraguan study may have important implications for governments and aid agencies that need to know where to direct their resources. Sandiford says that there is increasing evidence that female education, at any age, is "an important health intervention in its own right". The results of the study lend support to the World Bank's recommendation that education budgets in developing countries should be increased, not just to help their economies, but also to improve child health.

'We've known for a long time that maternal education is important,' says John Cleland of the London School of Hygiene and Tropical Medicine. 'But we thought that even if we started educating girls today, we'd have to wait a generation for the pay off. The Nicaraguan study suggests we may be able to bypass that.'

Cleland warns that the Nicaraguan crusade was special in many ways, and similar campaigns elsewhere might not work as well. It is notoriously difficult to teach adults skills that do not have an immediate impact on their everyday lives, and many literacy campaigns in other countries have been much less successful. 'The crusade was part of a larger effort to bring a better life to the people,' says Cleland. Replicating these conditions in other countries will be a major challenge for development workers.

### **Questions 14-18**

Complete the summary using the list of words, **A-J**, below.

Write the correct letter, **A-J**, in boxes 14-18 on your answer sheet.

**NB** You may use any letter more than once.

The Nicaraguan National Literacy Crusade aimed to teach large numbers of illiterate **14** ..... to read and write.

Public health experts have known for many years that there is a connection between child health and **15** .....

However, it has not previously been known whether these two factors were directly linked or not.

This question has been investigated by **16** ..... in Nicaragua.

As a result, factors such as **17** ..... and attitudes to children have been eliminated, and it has been shown that **18** ..... can in itself improve infant health and survival.

- A.** child literacy    **B.** men and women  
**C.** an international research team    **D.** medical care    **E.** mortality  
**F.** maternal literacy    **G.** adults and children    **H.** paternal literacy  
**I.** a National Literacy Crusade    **J.** family wealth

### **Questions 19-24**

Do the following statements agree with the claims of the writer in Reading Passage 2?

In boxes 19-24 on your answer sheet, write .

**YES** if the statement agrees with the claims of the writer

**NO** if the statement contradicts the claims of the writer

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

**19.** About a thousand of the women interviewed by the researchers had learnt to read when they were children.

**20.** Before the National Literacy Crusade, illiterate women had approximately the same levels of infant mortality as those who had learnt to read in primary school.



**21.** Before and after the National Literacy Crusade, the child mortality rate for the illiterate women stayed at about 110 deaths for each thousand live births.

**22.** The women who had learnt to read through the National Literacy Crusade showed the greatest change in infant mortality levels.

**23.** The women who had learnt to read through the National Literacy Crusade had the lowest rates of child mortality.

**24.** After the National Literacy Crusade, the children of the women who remained illiterate were found to be severely malnourished.

### **Questions 25 and 26**

Choose **TWO** letters, **A-E**.

Write the correct letters in boxes 25 and 26 on your answer sheet.

Which **TWO** important implications drawn from the Nicaraguan study are mentioned by the writer of the passage?

- A.** It is better to educate mature women than young girls.
- B.** Similar campaigns in other countries would be equally successful.
- C.** The effects of maternal literacy programmes can be seen very quickly.
- D.** Improving child health can quickly affect a country's economy.
- E.** Money spent on female education will improve child health.

## Reading Passage 3

You should spend about 20 minutes on **Questions 28-40** which are based on **Reading Passage 3** below.

*Persistent bullying is one of the worst experiences a child can face. How can it be prevented? Peter Smith, Professor of Psychology at the University of Sheffield, directed the Sheffield Anti-Bullying Intervention Project, funded by the Department for Education.*

*Here he reports on his findings.*

- A.** Bullying can take a variety of forms, from the verbal - being taunted or called hurtful names - to the physical - being kicked or shoved - as well as indirect forms, such as being excluded from social groups. A survey I conducted with Irene Whitney found that in British primary schools up to a quarter of pupils reported experience of bullying, which in about one in ten cases was persistent. There was less bullying in secondary schools, with about one in twenty-five suffering persistent bullying, but these cases may be particularly recalcitrant.
- B.** Bullying is clearly unpleasant, and can make the child experiencing it feel unworthy and depressed. In extreme cases it can even lead to suicide, though this is thankfully rare. Victimised pupils are more likely to experience difficulties with interpersonal relationships as adults, while children who persistently bully are more likely to grow up to be physically violent, and convicted of anti-social offences.
- C.** Until recently, not much was known about the topic, and little help was available to teachers to deal with bullying. Perhaps as a consequence, schools would often deny the problem. 'There is no bullying at this school' has been a common refrain, almost certainly untrue. Fortunately more schools are now saying: 'There is not much bullying here, but when it occurs we have a clear policy for dealing with it.'
- D.** Three factors are involved in this change. First is an awareness of the severity of the problem. Second, a number of resources to help tackle bullying have become available in Britain. For example, the Scottish Council for Research in Education produced a package of materials, Action Against Bullying, circulated to all schools in England and Wales as well as in Scotland in summer 1992, with a second pack, Supporting Schools Against Bullying, produced the following year. In Ireland, Guidelines on Countering Bullying Behaviour in Post-Primary Schools was published in 1993. Third, there is evidence that these materials work, and that schools can achieve something. This comes from carefully conducted 'before and after' evaluations of interventions in schools, monitored by a research team. In Norway, after an intervention campaign was introduced nationally, an evaluation of forty-two schools suggested that, over a two-year period, bullying was halved. The Sheffield investigation, which involved sixteen primary schools and seven secondary schools, found that most schools succeeded in reducing bullying.
- E.** Evidence suggests that a key step is to develop a policy on bullying, saying clearly what is meant by bullying, and giving explicit guidelines on what will be done if it occurs, what records will be kept, who will be informed, what sanctions will be employed. The policy should be developed through consultation, over a period of time - not just imposed from the head teacher's office! Pupils, parents and staff should feel they have been involved in the policy, which needs to be disseminated and implemented effectively.

Other actions can be taken to back up the policy. There are ways of dealing with the topic through the curriculum, using video, drama and literature. These are useful for raising awareness, and can best be tied in to early phases of development, while the school is starting to discuss the issue of bullying. They are also useful in renewing the policy for new pupils, or revising it in the light of experience. But curriculum work alone may only have short-term effects; it should be an addition to policy work, not a substitute.

There are also ways of working with individual pupils, or in small groups. Assertiveness training for pupils who are liable to be victims is worthwhile, and certain approaches to group bullying such as 'no blame', can be useful in changing the behaviour of bullying pupils without confronting them directly, although other sanctions may be needed for those who continue with persistent bullying.

Work in the playground is important, too. One helpful step is to train lunchtime supervisors to distinguish bullying from playful fighting, and help them break up conflicts. Another possibility is to improve the playground environment, so that pupils are less likely to be led into bullying from boredom or frustration.

**F.** With these developments, schools can expect that at least the most serious kinds of bullying can largely be prevented. The more effort put in and the wider the whole school involvement, the more substantial the results are likely to be. The reduction in bullying - and the consequent improvement in pupil happiness - is surely a worthwhile objective.

### **Questions 27-30**

*Reading Passage 3 has six sections, A-F.*

*Choose the correct heading for sections A-D from the list of headings below.*

*Write the correct number, i-vii, in boxes 27-30 on your answer sheet.*

#### **List of Headings**

- i.** The role of video violence
- ii.** The failure of government policy
- iii.** Reasons for the increased rate of bullying
- iv.** Research into how common bullying is in British schools
- v.** The reaction from schools to enquiries about bullying
- vi.** The effect of bullying on the children involved
- vii.** Developments that have led to a new approach by schools

**27.** Section A

**28.** Section B

**29.** Section C

**30.** Section D

### **Questions 31-34**

*Choose the correct answer, A, B, C or D.*

*Write the correct letter in boxes 31-34 on your answer sheet.*

**31.** A recent survey found that in British secondary schools

- A.** there was more bullying than had previously been the case.
- B.** there was less bullying than in primary schools.
- C.** cases of persistent bullying were very common.
- D.** indirect forms of bullying were particularly difficult to deal with.

**32.** Children who are bullied

- A.** are twice as likely to commit suicide as the average person.
- B.** find it more difficult to relate to adults.
- C.** are less likely to be violent in later life.
- D.** may have difficulty forming relationships in later life.

**33.** The writer thinks that the declaration 'There is no bullying at this school'

- A.** is no longer true in many schools.
- B.** was not in fact made by many schools.
- C.** reflected the school's lack of concern.
- D.** reflected a lack of knowledge and resources.

**34.** What were the findings of research carried out in Norway?

- A.** Bullying declined by 50% after an anti-bullying campaign.
- B.** Twenty-one schools reduced bullying as a result of an anti-bullying campaign.
- C.** Two years is the optimum length for an anti-bullying campaign.
- D.** Bullying is a less serious problem in Norway than in the UK.

### **Questions 35-39**

Complete the summary below.

Choose **NO MORE THAN TWO WORDS** from the passage for each answer.

Write your answers in boxes 35-39 on your answer sheet.

### **What steps should schools take to reduce bullying?**

The most important step is for the school authorities to produce a **35** ..... which makes the school's attitude towards bullying quite clear.

It should include detailed **36** ..... as to how the school and its staff will react if bullying occurs.

In addition, action can be taken through the **37** .....

This is particularly useful in the early part of the process, as a way of raising awareness and encouraging discussion.

On its own, however, it is insufficient to bring about a permanent solution.

Effective work can also be done with individual pupils and small groups.

For example, potential **38** ..... of bullying can be trained to be more self-confident.

Or again, in dealing with group bullying, a 'no blame' approach, which avoids confronting the offender too directly, is often effective.

Playground supervision will be more effective if members of staff are trained to recognise the difference between bullying and mere **39** .....

### **Question 40**

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

Write the correct letter in box 40 on your answer sheet.

Which of the following is the most suitable title for Reading Passage 3?

- A. Bullying: what parents can do
- B. Bullying: arc the media to blame?
- C. Bullying: the link with academic failure
- D. Bullying: from crisis management to prevention

## Test 10

### Reading Passage 1

You should spend about 20 minutes on **Questions 1-13**, which are based on **Reading Passage 1** below.

## Tea and the Industrial Revolution

*A Cambridge professor says that a change in drinking habits was the reason for the Industrial Revolution in Britain. Anjana Ahuja reports*

**A.** Alan Macfarlane, professor of anthropological science at King's College, Cambridge, has, like other historians, spent decades wrestling with the enigma of the Industrial Revolution. Why did this particular Big Bang — the world-changing birth of industry — happen in Britain? And why did it strike at the end of the 18th century?

**B.** Macfarlane compares the puzzle to a combination lock. 'There are about 20 different factors and all of them need to be present before the revolution can happen,' he says. For industry to take off, there needs to be the technology and power to drive factories, large urban populations to provide cheap labour, easy transport to move goods around, an affluent middle-class willing to buy mass-produced objects, a market-driven economy and a political system that allows this to happen. While this was the case for England, other nations, such as Japan, the Netherlands and France also met some of these criteria but were not industrialising. 'All these factors must have been necessary but not sufficient to cause the revolution,' says Macfarlane. 'After all, Holland had everything except coal, while China also had many of these factors. Most historians are convinced there are one or two missing factors that you need to open the lock.'

**C.** The missing factors, he proposes, are to be found in almost every kitchen cupboard. Tea and beer, two of the nation's favourite drinks, fuelled the revolution. The antiseptic properties of tannin, the active ingredient in tea, and of hops in beer — plus the fact that both are made with boiled water — allowed urban communities to flourish at close quarters without succumbing to water-borne diseases such as dysentery. The theory sounds eccentric but once he starts to explain the detective work that went into his deduction, the scepticism gives way to wary admiration. Macfarlane's case has been strengthened by support from notable quarters — Roy Porter, the distinguished medical historian, recently wrote a favourable appraisal of his research.

**D.** Macfarlane had wondered for a long time how the Industrial Revolution came about. Historians had alighted on one interesting factor around the mid-18th century that required explanation. Between about 1650 and 1740, the population in Britain was static. But then there was a burst in population growth. Macfarlane says: 'The infant mortality rate halved in the space of 20 years, and this happened in both rural areas and cities, and across all classes. People suggested four possible causes. Was there a sudden change in the viruses and bacteria around? Unlikely. Was there a revolution in medical science? But this was a century before Lister's revolution'. Was there a change in environmental conditions? There were improvements in agriculture that wiped out malaria, but these were small gains. Sanitation did not become widespread until the 19th century. The only option left is food. But the height and weight statistics show a decline. So the food must have got worse. Efforts to explain this sudden reduction in child deaths appeared to draw a blank.'

**E.** This population burst seemed to happen at just the right time to provide labour for the Industrial Revolution. When you start moving towards an industrial revolution, it is economically efficient to have people living close together,' says Macfarlane. But then you get disease, particularly from human waste: Some digging around in historical records revealed that there was a change in the incidence of water-borne disease at that time, especially dysentery. Macfarlane deduced that whatever the British were drinking must have been important in regulating disease. He says, 'We drank beer. For a long time, the English were protected by the strong antibacterial agent in hops, which were added to help preserve the beer. But in the late 17th

century a tax was introduced on malt, the basic ingredient of beer. The poor turned to water and gin and in the 1720s the mortality rate began to rise again. Then it suddenly dropped again. What caused this?'

**F.** Macfarlane looked to Japan, which was also developing large cities about the same time, and also had no sanitation. Water -borne diseases had a much looser grip on the Japanese population than those in Britain. Could it be the prevalence of tea in their culture? Macfarlane then noted that the history of tea in Britain provided an extraordinary coincidence of dates. Tea was relatively expensive until Britain started a direct clipper trade with China in the early 18th century. By the 1740s, about the time that infant mortality was dipping, the drink was common. Macfarlane guessed that the fact that water had to be boiled, together with the stomach -purifying properties of tea meant that the breast milk provided by mothers was healthier than it had ever been. No other European nation sipped tea like the British, which, by Macfarlane's logic, pushed these other countries out of contention for the revolution.

**G.** But, if tea is a factor in the combination lock, why didn't Japan forge ahead in a tea -soaked industrial revolution of its own? Macfarlane notes that even though 17th -century Japan had large cities, high literacy rates, even a futures market, it had turned its back on the essence of any work -based revolution by giving up labour-saving devices such as animals, afraid that they would put people out of work. So, the nation that we now think of as one of the most technologically advanced entered the 19th century having 'abandoned the wheel'.

### Questions 1-7

**Reading Passage 1** has seven paragraphs, **A - G**.

Choose the correct heading for each paragraph from the list of headings below.

Write the correct number, **i-ix**, in boxes **1-7** on your answer sheet.

#### **List of Headings**

- i.** The search for the reasons for an increase in population
- ii.** Industrialisation and the fear of unemployment
- ii.** The development of cities in Japan
- iv.** The time and place of the Industrial Revolution
- v.** The cases of Holland, France and China
- vi.** Changes in drinking habits in Britain
- vii.** Two keys to Britain's industrial revolution
- viii.** Conditions required for industrialisation
- ix.** Comparisons with Japan lead to the answer

**1.** Paragraph **A**

**2.** Paragraph **B**

3. Paragraph C

4. Paragraph D

5. Paragraph E

6. Paragraph F

7. Paragraph G

### **Questions 8-13**

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

In boxes **8-13** 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

8. China's transport system was not suitable for industry in the 18th century.

9. Tea and beer both helped to prevent dysentery in Britain.

10. Roy Porter disagrees with Professor Macfarlane's findings.

11. After 1740, there was a reduction in population in Britain.

12. People in Britain used to make beer at home.

13. The tax on malt indirectly caused a rise in the death rate.



## Reading Passage 2

You should spend about 20 minutes on **Question 14 - 26**, which are based on **Reading Passage 2** on the following pages.

### Gifted children and learning

*What have been the trends and what are the prospects for European transport systems?*

**A.** Internationally, 'giftedness' is most frequently determined by a score on a general intelligence test, known as an IQ test, which is above a chosen cut-off point, usually at around the top 2-5%. Children's educational environment contributes to the IQ score and the way intelligence is used. For example, a very close positive relationship was found when children's IQ scores were compared with their home educational provision (Freeman, 2010). The higher the children's IQ scores, especially over 130, the better the quality of their educational backup, measured in terms of reported verbal interactions with parents, number of books and activities in their home etc. Because IQ tests are decidedly influenced by what the child has learned, they are to some extent measures of current achievement based on age-norms; that is, how well the children have learned to manipulate their knowledge and know-how within the terms of the test. The vocabulary aspect, for example, is dependent on having heard those words. But IQ tests can neither identify the processes of learning and thinking nor predict creativity.

**B.** Excellence does not emerge without appropriate help. To reach an exceptionally high standard in any area very able children need the means to learn, which includes material to work with and focused challenging tuition - and the encouragement to follow their dream. There appears to be a qualitative difference in the way the intellectually highly able think, compared with more average-ability or older pupils, for whom external regulation by the teacher often compensates for lack of internal regulation. To be at their most effective in their self-regulation, all children can be helped to identify their own ways of learning - metacognition - which will include strategies of planning, monitoring, evaluation, and choice of what to learn. Emotional awareness is also part of metacognition, so children should be helped to be aware of their feelings around the area to be learned, feelings of curiosity or confidence, for example.

**C.** High achievers have been found to use self-regulatory learning strategies more often and more effectively than lower achievers, and are better able to transfer these strategies to deal with unfamiliar tasks. This happens to such a high degree in some children that they appear to be demonstrating talent in particular areas. Overviews of research on the thinking process of highly able children, (Shore and Kanevsky, 1993) put the instructor's problem succinctly: 'If they (the gifted) merely think more quickly, then we need only teach more quickly. If they merely make fewer errors, then we can shorten the practice'. But of course, this is not entirely the case; adjustments have to be made in methods of learning and teaching, to take account of the many ways individuals think.

**D.** Yet in order to learn by themselves, the gifted do need some support from their teachers. Conversely, teachers who have a tendency to 'overdirect' can diminish their gifted pupils' learning autonomy. Although 'spoon-feeding' can produce extremely high examination results, these are not always followed by equally impressive life successes. Too much dependence on the teacher risks loss of autonomy and motivation to discover. However, when teachers help pupils to reflect on their own learning and thinking activities, they increase their pupils' self-regulation. For a young child, it may be just the simple question 'What have you learned today?' which helps them to recognise what they are doing. Given that a fundamental goal of education is to transfer the control of learning from teachers to pupils, improving pupils' learning to learn techniques should be a major outcome of the school experience, especially for the highly competent. There are quite a number of new methods which can help, such as child-initiated learning, ability-peer tutoring, etc. Such practices have been found to be particularly useful for bright children from deprived areas.

**E.** But scientific progress is not all theoretical, knowledge is also vital to outstanding performance: individuals who know a great deal about a specific domain will achieve at a higher level than those who do not (Elshout, 1995). Research with creative scientists by Simonton (1988) brought him to the conclusion that above a

certain high level, characteristics such as independence seemed to contribute more to reaching the highest levels of expertise than intellectual skills, due to the great demands of effort and time needed for learning and practice. Creativity in all forms can be seen as expertise mixed with a high level of motivation (Weisberg, 1993).

**F.** To sum up, learning is affected by emotions of both the individual and significant others. Positive emotions facilitate the creative aspects of learning and negative emotions inhibit it. Fear, for example, can limit the development of curiosity, which is a strong force in scientific advance, because it motivates problem -solving behaviour. In Boekaerts' (1991) review of emotion in the learning of very high IQ and highly achieving children, she found emotional forces in harness. They were not only curious, but often had a strong desire to control their environment, improve their learning efficiency, and increase their own learning resources.

### Questions 14-17

Reading Passage 2 has six paragraphs, **A—F**.

Which paragraph contains the following information?

Write the correct letter, **A—F**, in boxes **14-17** on your answer sheet.

**NB** You may use any letter more than once.

**14** a reference to the influence of the domestic background on the gifted child

**15** reference to what can be lost if learners are given too much guidance

**16** a reference to the damaging effects of anxiety

**17** examples of classroom techniques which favour socially - disadvantaged children

### Questions 18-22

Look at the following statements (**Questions 18-22**) and the list of people below.

Match each statement with the correct person or people, **A—E**.

Write the correct letter, **A—E**, in boxes **18-22** on your answer sheet.

**18.** Less time can be spent on exercises with gifted pupils who produce accurate work.

**19.** Self-reliance is a valuable tool that helps gifted students reach their goals.

**20.** Gifted children know how to channel their feelings to assist their learning.

**21.** The very gifted child benefits from appropriate support from close relatives.

**22.** Really successful students have learnt a considerable amount about their subject.

### **Questions 23-26**

Complete the sentences below.

Choose **NO MORE THAN TWO WORDS** from the passage for each answer.

Write your answers in boxes **23-26** on your answer sheet.

**23.** One study found a strong connection between children's IQ and the availability of ..... and ..... at home.

**24.** Children of average ability seem to need more direction from teachers because they do not have .....

**25.** Metacognition involves children understanding their own learning strategies, as well as developing .....

**26.** Teachers who rely on what is known as ..... often produce sets of impressive grades in class tests.

## Reading Passage 3

You should spend about 20 minutes on **Questions 27-40** which are based on **Reading Passage 3** below.

### Museums of fine art and their public

**The fact that people go to the Louvre museum in Paris to see the original painting Mona Lisa when they can see a reproduction anywhere leads us to question some assumptions about the role of museums of fine art in today's world.**

One of the most famous works of art in the world is Leonardo da Vinci's Mona Lisa. Nearly everyone who goes to see the original will already be familiar with it from reproductions, but they accept that fine art is more rewardingly viewed in its original form.

However, if Mona Lisa was a famous novel, few people would bother to go to a museum to read the writer's actual manuscript rather than a printed reproduction. This might be explained by the fact that the novel has evolved precisely because of technological developments that made it possible to print out huge numbers of texts, whereas oil paintings have always been produced as unique objects. In addition, it could be argued that the practice of interpreting or 'reading' each medium follows different conventions. With novels, the reader attends mainly to the meaning of words rather than the way they are printed on the page, whereas the 'reader' of a painting must attend just as closely to the material form of marks and shapes in the picture as to any ideas they may signify.

Yet it has always been possible to make very accurate facsimiles of pretty well any fine art work. The seven surviving versions of Mona Lisa bear witness to the fact that in the 16th century, artists seemed perfectly content to assign the reproduction of their creations to their workshop apprentices as regular 'bread and butter' work. And today the task of reproducing pictures is incomparably more simple and reliable, with reprographic techniques that allow the production of high-quality prints made exactly to the original scale, with faithful colour values, and even with duplication of the surface relief of the painting.

But despite an implicit recognition that the spread of good reproductions can be culturally valuable, museums continue to promote the special status of original work.

Unfortunately, this seems to place severe limitations on the kind of experience offered to visitors.

One limitation is related to the way the museum presents its exhibits. As repositories of unique historical objects, art museums are often called 'treasure houses'. We are reminded of this even before we view a collection by the presence of security guards, attendants, ropes and display cases to keep us away from the exhibits. In many cases, the architectural style of the building further reinforces that notion. In addition, a major collection like that of London's National Gallery is housed in numerous rooms, each with dozens of works, any one of which is likely to be worth more than all the average visitor possesses. In a society that judges the personal status of the individual so much by their material worth, it is therefore difficult not to be impressed by one's own relative 'worthlessness' in such an environment.

Furthermore, consideration of the 'value' of the original work in its treasure house setting impresses upon the viewer that, since these works were originally produced, they have been assigned a huge monetary value by some person or institution more powerful than themselves. Evidently, nothing the viewer thinks about the work is going to alter that value, and so today's viewer is deterred from trying to extend that spontaneous, immediate, self-reliant kind of reading which would originally have met the work.

The visitor may then be struck by the strangeness of seeing such diverse paintings, drawings and sculptures brought together in an environment for which they were not originally created. This 'displacement effect' is further heightened by the sheer volume of exhibits. In the case of a major collection, there are probably more works on display than we could realistically view in weeks or even months.

This is particularly distressing because time seems to be a vital factor in the appreciation of all art forms. A fundamental difference between paintings and other art forms is that there is no prescribed time over which a painting is viewed. By contrast, the audience encourage an opera or a play over a specific time, which is the duration of the performance. Similarly novels and poems are read in a prescribed temporal sequence, whereas a picture has no clear place at which to start viewing, or at which to finish. Thus art works themselves encourage us to view them superficially, without appreciating the richness of detail and labour that is involved.

Consequently, the dominant critical approach becomes that of the art historian, a specialised academic approach devoted to ‘discovering the meaning’ of art within the cultural context of its time. This is in perfect harmony with the museum’s function, since the approach is dedicated to seeking out and conserving ‘authentic’, original, readings of the exhibits. Again, this seems to put paid to that spontaneous, participators criticism which can be found in abundance in criticism of classic works of literature, but is absent from most art history.

The displays of art museums serve as a warning of what critical practices can emerge when spontaneous criticism is suppressed. The museum public, like any other audience, experience art more rewardingly when given the confidence to express their views. If appropriate works of fine art could be rendered permanently accessible to the public by means of high-fidelity reproductions, as literature and music already are, the public may feel somewhat less in awe of them. Unfortunately, that may be too much to ask from those who seek to maintain and control the art establishment.

### Questions 27-31

Complete the summary using the list of words, **A—L**, below.

Write the correct letter, **A—L**, in boxes **27-31** on your answer sheet.

## The value attached to original works of art

People go to art museums because they accept the value of seeing an original work of art. But they do not go to museums to read original manuscripts of novels, perhaps because the availability of novels has depended on **27** ..... for so long, and also because with novels, the **28** ..... are the most important thing.

However, in historical times artists such as Leonardo were happy to instruct **29** ..... to produce copies of their work and these days new methods of reproduction allow excellent replication of surface relief features as well as colour and **30** .....

It is regrettable that museums still promote the superiority of original works of art, since this may not be in the interests of the **31** .....

**A** institution

**B** mass production

**C** mechanical processes

**D** public

**E** paints

**F** artist

**G** size

**H** underlying ideas

**I** basic technology

**J** readers

**K** picture frames

**L** assistants

### **Questions 32-35**

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

Write the correct letter in boxes **32-35** on your answer sheet.

**32.** The writer mentions London's National Gallery to illustrate

- A.** the undesirable cost to a nation of maintaining a huge collection of art.
- B.** the conflict that may arise in society between financial and artistic values.
- C.** the negative effect a museum can have on visitors' opinions of themselves.
- D.** the need to put individual well-being above large-scale artistic schemes.

**33.** The writer says that today, viewers may be unwilling to criticise a work because

- A.** they lack the knowledge needed to support an opinion.
- B.** they fear it may have financial implications.
- C.** they have no real concept of the work's value.
- D.** they feel their personal reaction is of no significance.

**34.** According to the writer, the 'displacement effect' on the visitor is caused by

- A.** the variety of works on display and the way they are arranged.
- B.** the impossibility of viewing particular works of art over a long period.

- C. the similar nature of the paintings and the lack of great works.
- D. the inappropriate nature of the individual works selected for exhibition.

35. The writer says that unlike other forms of art, a painting does not

- A. involve direct contact with an audience.
- B. require a specific location for a performance.
- C. need the involvement of other professionals.
- D. have a specific beginning or end.

### **Questions 36-40**

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

In boxes **36-40** on your answer sheet, write

**YES** if the statement agrees with the views of the writer

**NO** if the statement contradicts the views of the writer

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

- 36. Art history should focus on discovering the meaning of art using a range of media.
- 37. The approach of art historians conflicts with that of art museums.
- 38. People should be encouraged to give their opinions openly on works of art.
- 39. Reproductions of fine art should only be sold to the public if they are of high quality.
- 40. In the future, those with power are likely to encourage more people to enjoy art.