

IELTS

READING

(ACADEMIC)

Actual Tests With Answers

February - March 2023

TARGET SERIES



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Preface

As far as you know, IELTS candidates will have only 60 minutes for this IELTS Reading part with a total of 40 questions. Therefore, it is absolutely necessary that you invest time in practicing the real IELTS reading tests for this module.

Beside Cambridge IELTS Practice Tests series published by Oxford University Press, IELTS General Reading Recent Actual Tests with Answers aims to develop both test-taking skills and language proficiency to help you achieve a high IELTS Reading score. It contains IELTS General Reading Tests in the chronological order of the recent tests and an Answer Key. Each test contains three sections which cover a rich variety of topics and give a lot of practice for a wide range of question types used in the IELTS Exam such as multiple-choice questions, short-answer questions, sentence completion, summary completion, classification, matching lists / phrases, matching paragraph headings, identification of information – True/False/Not Given, etc. When studying IELTS with this e-book, you can evaluate at the nearest possibility how difficult the IELTS Reading section is in the real exam, and what the top most common traps are. Moreover, these tests are extracted from authentic IELTS bank sources; therefore, you are in all probability to take these tests in your real examinations.

Don't just trust luck in your IELTS exam – the key is practice!

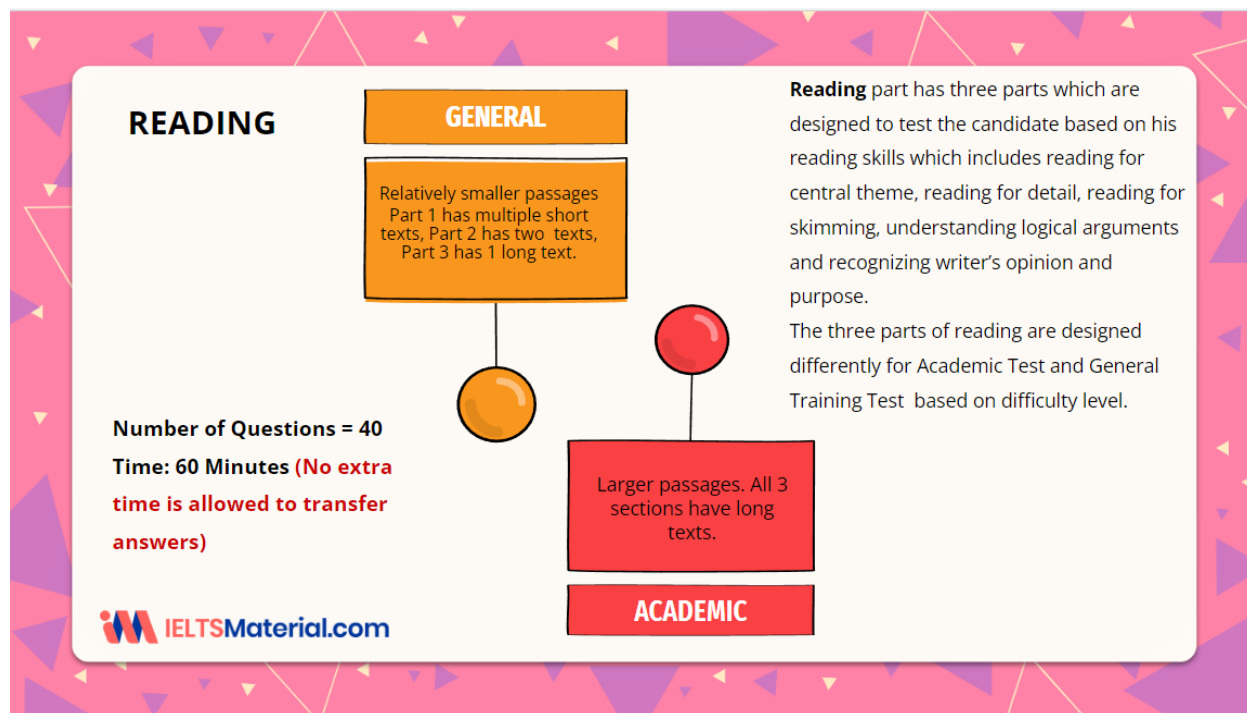
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Introduction



Reading Section Scoring

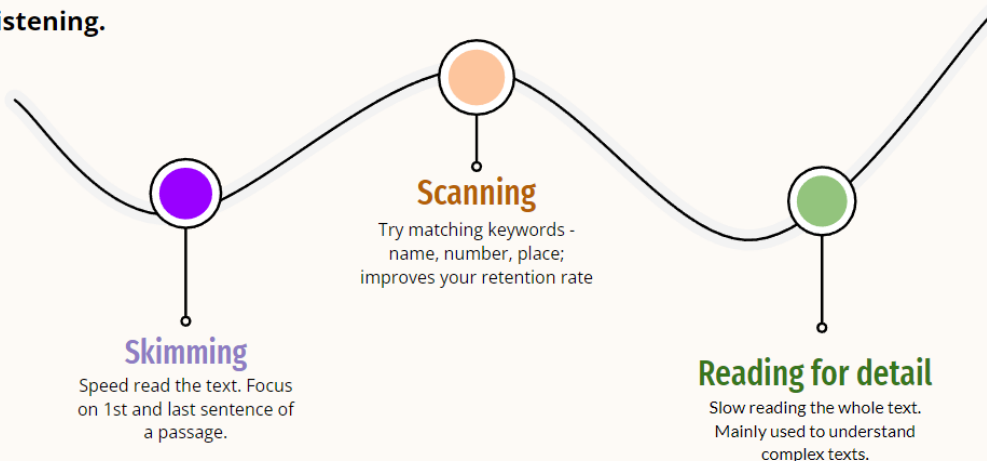
Academic

The scores out of 40 are translated to IELTS 9-band scale. All the scores are reported in whole and half bands only i.e. if your score is 6.2 it will be rounded to 6.

Correct Answers	Band Scores
40-39	9
38-37	8.5
36-35	8
34-33	7.5
32-30	7
29-27	6.5
26-23	6
22-19	5.5
18-15	5
14-13	4.5
12-10	4
9-8	3.5
7-6	3
5-4	2.5

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Steps to understanding the questions faster and easier for both reading and listening.



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Understanding the Basics of Paraphrasing

It is a method to rewrite a sentence or phrase by using different words but the meaning of the sentence should not change. It is used to prevent reiteration of the same words and secure you from losing marks.

Tips on paraphrasing a sentence:

1. Read the text carefully to **understand the meaning** of the text.
2. Identify the **main idea and the independent clause** in the sentence.
3. Change as many words as possible **using synonyms and antonyms**.
4. Interchange the structure of the sentence using:

- Active <-> Passive

- Complex <-> Simple

- Phrases <-> Clauses

5. While making these changes make sure the new sentence is **grammatically correct** and has not lost its original meaning.

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POINTS TO KEEP IN MIND

1. Read each and every instruction carefully while attempting the test.
2. **Develop reading skills and increase your reading speed** through practice.
3. Practice on each type of questions that are usually asked.
4. **Develop vocabulary**
5. Don't waste your time on the whole passage, **focus on the key words.**
6. **Even for reading section you need to be proficient in writing and grammar.**
7. Last but not least try to stay calm and focussed during the test.



Practice Test 1

Reading Passage 1

Instructions to follow

You should spend 20 minutes on Questions 1-14 which are based on Reading Passage 1.

Twin Study: Two of a kind

A. The scientific study of twins goes back to the late 19th century, when Francis Galton, an early geneticist, realised that they came in two varieties: identical twins born from one egg and non-identical twins that had come from two. That insight turned out to be key, although it was not until 1924 that it was used to formulate what is known as the twin rule of pathology, and twin studies really got going.

B. The twin rule of pathology states that any heritable disease will be more concordant (that is, more likely to be jointly present or absent) in identical twins than in non-identical twins – and, in turn, will be more concordant in non-identical twins than in non-siblings. Early work, for example, showed that the statistical correlation of skin-mole counts between identical twins was 0.4, while non-identical twins had a correlation of only 0.2. (A score of 1.0 implies a perfect correlation, while a score of zero implies no correlation.)

This result suggests that moles are heritable, but it also implies that there is an environmental component to the development of moles, otherwise, the correlation in identical twins would be close to 1.0.

C. Twin research has shown that whether or not someone takes up smoking is determined mainly by environmental factors, but once he does so, how much he smokes is largely down to his genes. And while a person's religion is clearly a cultural attribute, there is a strong genetic component to religious fundamentalism. Twin studies are also unraveling the heritability of various aspects of human personality. Traits from neuroticism and anxiety to thrill – and novelty-seeking all have large genetic components. Parenting matters, but it does not determine personality in the way that some had thought.

D. More importantly, perhaps, twin studies are helping the understanding of diseases such as cancer, asthma, osteoporosis, arthritis and immune disorders. And twins can be used, within ethical, for medical experiments. A study that administered vitamin C to one twin and a placebo to the other found that it had no effect on the common cold. The lesson from all of today's twin studies is that most human traits are at least partially influenced by genes. However, for the most part, the age-old dichotomy between nature and nurture is not very useful. Many genetic programs are open to input from the environment, and genes are frequently switched on or off by environmental signals. It is also possible that genes themselves influence their environment. Some humans have an innate preference for participation in sports. Others are drawn to novelty.

Might people also be drawn to certain kinds of friends and types of experience? In this way, a person's genes might shape the environment they act in as much as the environment shapes the actions of the genes.

E. In the past, such research has been controversial. Josef Mengele, a Nazi doctor working at the Auschwitz extermination camp during the second world war, was fascinated by twins. He sought them out among arrivals at the camp and preserved them from the gas-chambers for a series of brutal experiments. After the war, Cyril Burt, a British psychologist who worked on the heredity of intelligence, tainted twin research with results that appear, in retrospect, to have been rather too good. Some of his data on identical twins who had been reared apart were probably faked. In any case, the prevailing ideology in the social sciences after the war was Marxist and disliked suggestions that differences in human potential might have underlying genetic causes. Twin studies were thus viewed with suspicion.

F. The ideological pendulum has swung back; however, as the human genome project and its aftermath have turned genes for abstract concepts to real pieces of DNA. The role of genes in sensitive areas such as intelligence is acknowledged by all but a few die-hards. The interesting questions now concern how nature and nurture interact to produce particular bits of biology, rather than which of the two is more important. Twin studies, which are a good way to ask these questions, are back in fashion, and many twins are enthusiastic participants in this research.

G. Research at the Twinsburg festival began in a small way, with a single stand in 1979. Gradually, news spread and more scientists began turning up. This year, half a dozen groups of researchers were lodged in a specially pitched research tent. In one corner of this tent, Paul Breslin, who works at the Monell Institute in Philadelphia, watched over several tables where twins sat sipping clear liquids from cups and making notes. It was the team's third year at Twinsburg. Dr Breslin and his colleagues want to find out how genes influence human perception, particularly the senses of smell and taste and those (warmth, cold, pain, tingle, itch and so on) that result from stimulation of the skin. Perception is an example of something that is probably influenced by both genes and experience. Even before birth, people are exposed to flavours such as chocolate, garlic, mint and vanilla that pass intact into the bloodstream, and thus to the fetus. Though it is not yet clear whether such pre-natal exposure shapes taste-perception, there is evidence that it shapes preferences for foods encountered later in life.

H. However, there are clearly genetic influences at work, as well – for example in the ability to taste quinine. Some people experience this as intensely bitter, even when it is present at very low levels. Others, whose genetic endowment is different, are less bothered by it. Twin studies make this extremely clear. Within a pair of identical twins, either both, or neither, will find quinine hard to swallow. Non-identical twins will agree less frequently.

I. On the other side of the tent Dennis Drayna, from the National Institute on Deafness and Other Communication Disorders, in Maryland, was studying hearing. He wants to know what happens to sounds after they reach the ear. It is not clear, he says, whether the sound is processed into sensation mostly in the ear or in the brain. Dr Drayna has already been involved in a twin study which revealed that the perception of musical pitch is highly heritable. At Twinsburg, he is playing different words, or parts of words, into the left and right ears of his twinned volunteers. The composite of the two sounds that an individual reports hearing depends on how he processes this diverse information and that, Dr Drayna believes, may well be influenced by genetics.

J. Elsewhere in the marquee, Peter Miraldi, of Kent State University in Ohio, was trying to find out whether genes affect an individual's motivation to communicate with others. A number of twin studies have shown that personality and sociability are heritable, so he thinks this is fertile ground. And next to Mr Miraldi was a team of dermatologists from Case Western Reserve University in Cleveland. They are looking at the development of skin disease and male-pattern baldness. The goal of the latter piece of research is to find the genes responsible for making men's hair fall out.

K. The busiest part of the tent, however, was the queue for forensic-science research into fingerprints. The origins of this study are shrouded in mystery. For many months, the festival's organisers have been convinced that the Secret Service – the American government agency responsible for, among other things, the safety of the president – is behind it.

When The Economist contacted the Secret Service for more information, we were referred to Steve Nash, who is chairman of the International Association for Identification (IAI) and is also a detective in the scientific investigations section of the Marin County Sheriff's Office in California. The IAI, based in Minnesota, is an organisation of forensic scientists from around the world. Among other things, it publishes the Journal of Forensic Identification.

The Reading Passage has seven paragraphs A-K. Which paragraph contains the following information? Write the correct letter A-K, in boxes 1-5 on your answer sheet.

1. Mentioned research conducted in Ohio
2. Medical contribution to the researches for twins.
3. Research situation under life-threatening conditions
4. Data of similarities of identical twins
5. Reasons that make one study unconvincing

Complete the following summary of the paragraphs of Reading Passage. Using NO MORE THAN TWO WORDS from the Reading Passage for each answer.

The first one that conducted research on twins is called (6) He separated twins into two categories: non-identical and identical twins.

The twin research was used in a medical application in as early as the year of (7)

Choose the correct letters in the following options. Write your answers in boxes 8–10 on your answer sheet.

Please choose THREE research fields that had been carried out in Ohio, Maryland and Twinburgh?

- A. Sense**
- B. Cancer**
- C. Be allergic to vitamin D**
- D. Mole heredity**
- E. Sound**
- F. Boldness of men**

Choose the correct letters in the following options. Write your answers in boxes 11–13 on your answer sheet.

Please choose THREE results that had been verified in this passage.

- A. Non-identical twins come from different eggs**
- B. Genetic relation between identical twins is closer than non-identical ones**
- C. Vitamin C has an evident effect on cold**
- D. Genetic influence of smoking is superior to the environment's**
- E. If a pregnant woman eats too much sweet would lead to skin disease**
- F. Hair loss has been found to be connected with skin problem**

Reading Passage 2

Instructions to follow

You should spend 20 minutes on Questions 14–26 which are based on Reading Passage 2.

Facial Expression

A. A facial expression is one or more motions or positions of the muscles in the skin. These movements convey the emotional state of the individual to observers. Facial expressions are a form of nonverbal communication. They are a primary means of conveying social information among aliens, but also occur in most other mammals and some other animal species. Facial expressions and their significance in the perceiver can, to some extent, vary between cultures with evidence from descriptions in the works of Charles Darwin.

B. Humans can adopt a facial expression to read as a voluntary action. However, because expressions are closely tied to emotion, they are more often involuntary. It can be nearly impossible to avoid expressions for certain emotions, even when it would be strongly desirable to do so; a person who is trying to avoid insulting an individual he or she finds highly unattractive might, nevertheless, show a brief expression of disgust before being able to reassume a neutral expression. Microexpressions are one example of this phenomenon.

The close link between emotion and expression can also work in the order direction; it has been observed that voluntarily assuming an expression can actually cause the associated emotion.

C. Some expressions can be accurately interpreted even between members of different species – anger and extreme contentment being the primary examples. Others, however, are difficult to interpret even in familiar individuals. For instance, disgust and fear can be tough to tell apart. Because faces have only a limited range of movement, expressions rely upon fairly minuscule differences in the proportion and relative position of facial features, and reading them requires considerable sensitivity to the same. Some faces are often falsely read as expressing some emotion, even when they are neutral because their proportions naturally resemble those another face would temporarily assume when emoting.

D. Also, a person's eyes reveal much about how they are feeling, or what they are thinking. Blink rate can reveal how nervous or at ease a person may be. Research by Boston College professor Joe Tecce suggests that stress levels are revealed by blink rates. He supports his data with statistics on the relation between the blink rates of presidential candidates and their success in their races. Tecce claims that the faster blinker in the presidential debates has lost every election since 1980. Though Tecce's data is interesting, it is important to recognize that non-verbal communication is multi-channelled, and focusing on only one aspect is reckless. Nervousness can also be measured by examining each candidate's perspiration, eye contact and stiffness.

E. As Charles Darwin noted in his book *The Expression of the Emotions in Man and Animals*: the young and the old of widely different races, both with man and animals, express the same state of mind by the same movements. Still, up to the mid-20th century, most anthropologists believed that facial expressions were entirely learned and could, therefore, differ among cultures. Studies conducted in the 1960s by Paul Ekman eventually supported Darwin's belief to a large degree.

F. Ekman's work on facial expressions had its starting point in the work of psychologist Silvan Tomkins. Ekman showed that contrary to the belief of some anthropologists including Margaret Mead, facial expressions of emotion are not culturally determined, but universal across human cultures. The South Fore people of New Guinea were chosen as subjects for one such survey. The study consisted of 189 adults and 130 children from among a very isolated population, as well as twenty-three members of the culture who lived a less isolated lifestyle as a control group. Participants were told a story that described one particular emotion; they were then shown three pictures (two for children) of facial expressions and asked to match the picture which expressed the story's emotion.

G. While the isolated South Fore people could identify emotions with the same accuracy as the non-isolated control group, problems associated with the study include the fact that both fear and surprise were constantly misidentified. The study concluded that certain facial expressions correspond to particular emotions and can not be covered, regardless of cultural background, and regardless of whether or not the culture has been isolated or exposed to the mainstream.

H. Expressions Ekman found to be universally included those indicating anger, disgust, fear, joy, sadness, and surprise (not that none of these emotions has a definitive social component, such as shame, pride, or schadenfreude). Findings on contempt (which is social) are less clear, though there is at least some preliminary evidence that this emotion and its expression are universally recognized. This may suggest that the facial expressions are largely related to the mind and each part on the face can express specific emotion.

Complete the Summary paragraph below. In boxes 14–18 on your answer sheet, write the correct answer with NO MORE THAN TWO WORDS.

The result of Ekman's study demonstrates that fear and surprise are persistently **(14)** and made a conclusion that some facial expressions have something to do with certain **(15)** Which is impossible covered, despite of **(16)** and whether the culture has been **(17)** or **(18)** to the mainstream.

The reading Passage has seven paragraphs A-H. Which paragraph contains the following information? Write the correct letter A-H, in boxes 19-24 on your answer sheet. NB You may use any letter more than once.

- 19.** the difficulty identifying the actual meaning of facial expressions
- 20.** the importance of culture on facial expressions is initially described
- 21.** collected data for the research on the relation between blink and the success in elections
- 22.** the features on the sociality of several facial expressions
- 23.** an indicator to reflect one's extent of nervousness
- 24.** the relation between emotion and facial expressions

Choose two letters from the A-E. Write your answers in boxes 25-26 on your answer sheet. Which TWO of the following statements are true according to Ekman's theory?

- A.** No evidence shows animals have their own facial expressions
- B.** The potential relationship between facial expression and state of mind exists
- C.** Facial expression are concerning different cultures
- D.** Different areas on face conveys a certain state of mind
- E.** Mind controls men's facial expressions more obvious than women's

Reading Passage 3

Instructions to follow

You should spend 20 minutes on Questions 27–40 which are based on Reading Passage 3.

The Can – A Brief History Lesson

A. The story of the can begins in 1795 when Nicholas Appert, a Parisian, had an idea: why not pack food in bottles like wine? Fifteen years later, after researching and testing his idea, he published his theory: if food is sufficiently heated and sealed in an airtight container, it will not spoil. In 1810 Peter Durand, an Englishman, wanted to surpass Appert's invention, so he elected to try tin instead of glass. Like glass, tin could be sealed airtight but tin was not breakable and was much easier to handle. Durand himself did no canning, but two other Englishmen, Bryan Donkin and John Hall, used Durand's patent. After experimenting for more than a year, they set up a commercial canning factory and by 1813 they were sending tins of food to British army and navy authorities for trial.

B. Perhaps the greatest encouragement to the newborn canning industry was the explosion in the number of new colonial territories. As people and goods were being transported to all parts of the world, the can industry itself was growing in new territories. Englishmen who emigrated to America brought their newfound knowledge with them. One of these was Thomas Kensett, who might fairly be called the father of the can manufacturing industry in the United States. In 1812 he set up a small plant on the New York waterfront to can the first hermetically sealed products in the United States.

C. Just before the Civil War, a technical advance by canners enabled them to speed up production. Adding calcium chloride to the water in which cans were cooked raised the water temperature, speeding up the canning process. Also for almost 100 years, tin cans were made by artisans by hand. It was a laborious process, requiring considerable skill and muscle. As the industrial revolution took hold in the United States, the demand for cans increased and machines began to replace the artisans' handiwork. A good artisan could make only 10 cans a day. True production progress in can-making began in 1922, when American engineers perfected the body-making process. New methods soon increased production of cans to as many as 250 a minute.

D. As early as 1940, can manufacturers began to explore the possibility of adapting cans to package carbonated soft drinks. The can had to be strengthened to accommodate higher internal can pressures created by carbonation (especially during warm summer months), which meant increasing the thickness of the metal used in the can ends. Another concern for the new beverage can was its shelf life. Even small amounts of dissolved tin or iron from the can could impair the drinking quality of drinks. Also the food acids, including carbonic, citric and phosphoric, in soft drinks presented a risk for the rapid corrosion of exposed tin and iron in the can. At this point the can was upgraded by improving the organic coatings used to line the inside. The can manufacturers then embarked on a program of material and cost savings by reducing both the amount of steel and the amount of coating used in can making. These efforts were in part inspired by a new competitor – aluminum.

E. Beverage cans made from aluminum were first introduced in 1965. This was an exciting innovation for the packaging industry because the aluminum can was made with only two pieces – a body and an end. This made production easier. Some of the reasons for the aluminum can's acceptance were its ductility, its support of carbonation pressure, its lighter weight and the fact that aluminum does not rust. Both steel and aluminum cans used an easy-open end tab but the aluminum tab was much easier to make. Perhaps the most critical element in the aluminum can's market success was its recycling value.

Aluminum can recycling excelled economically in the competition with steel because of the efficiencies aluminum cans realized in making new cans from recycled materials compared with 100 percent virgin aluminum. Steel did not realize similar economies in the recycling process.

F. Prior to 1970, can makers, customers and consumers alike were unaware of the impact that the mining and manufacturing of steel or aluminum had on the environment. The concept of natural resource preservation was not an issue of great importance and the low growth of population during these early years further de-emphasized concerns for resource depletion. Both industries, however, came to realize the importance of reducing their impact on the environment in the late 1960s and early 1970s as a new environmentally conscious generation emerged. Manufacturers began to recognize the economics of recycling, namely lower manufacturing costs from using less material and less energy. By the 1980s and 1990s, recycling had become a way of life. Aluminum can recycling has become a billion-dollar business and one of the world's most successful environmental enterprises. Over the years, the aluminum can has come to be known as America's most recyclable package, with over 60 percent of cans being recycled annually.

G. Advances in can manufacturing technology have also brought us lighter aluminum cans. In 1972, one pound of aluminum yielded only 21.75 cans. Today, by using less material to make each can, one pound of aluminum makes approximately 32 cans – a 47 percent improvement.

Just the lightening of can ends makes a huge difference. When you multiply the savings by the 100 billion cans that are made each year, the weight and savings are phenomenal – over 200 million pounds of aluminum!

Reading Passage has seven paragraphs A – G. From the list of headings below choose the most suitable headings for paragraphs B – G. Write the appropriate number (i – xi) in boxes 27–32 on your answer sheet. There are more headings than paragraphs, so you will not use them all.

List of headings

- i.** The Invention of the Aluminium Can
- ii.** Technological Breakthroughs
- iii.** Canning and the Beer Industry
- iv.** The Invention
- v.** Canning and War
- vi.** Further Manufacturing Advances
- vii.** Problems with Spoiled Contents
- viii.** Expansion of the Industry
- ix.** Today's Uses for Canning
- x.** Drinks Canning
- xi.** Cans and The Environment

27. Paragraph B

28. Paragraph C

29. Paragraph D

30. Paragraph E

31. Paragraph F

32. Paragraph G

The first list (questions 33–38) is a list of dates of events in Reading Passage. The second list (A – G) is a list of the events. Match the year with the correct event in the history of the can.

List of events

A. Mass production techniques revolutionized the canning process.

B. Tinned food was tested by military authorities.

C. Today's canning material was first introduced.

D. The first American canning factory was opened.

E. Tin was used in the canning process for the first time.

F. The canning of fizzy drinks began.

G. The first business canning plant was opened.

List of dates

33. 1922

34. 1812

35. 1813

36. 1965

37. 1813

38. 1940

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

In boxes 39–40 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**

39. Recycling has helped reduce manufacturing overheads.

40. Aluminium can production costs have fallen by nearly 50% since 1972.

Practice Test 2

Reading Passage 1

Instructions to follow

You should spend 20 minutes on Questions 1-14 which are based on Reading Passage 1.

The role of accidents in business

In 1894 Dr John Kellogg and his brother, Will, were supervising a hospital and health spa in Michigan. The patients were on a restricted diet. One day, the brothers left cooked wheat untended for more than 24 hours. When they returned, they saw what they had done. It was no good to eat, but they decided to run the stale wheat through rollers, just to see how it would turn out. Normally, the process produced long sheets, but they were surprised to discover that this time the rollers created flat flakes. They baked them, and then tried the same thing with corn. From this accidental discovery came the cornflakes that generations have now been eating for breakfast.

Accidents happen; there is nothing predictable and orderly about innovation. Nobel laureate Sir Alan Hodgkin, who discovered how nerve cells transmit electrical impulses between the skin and the brain, commented: 'I believe that the record of my published papers conveys an impression of directedness and planning which does not at all coincide with the actual sequence of events.'

The same rule applies in business. The mistake that gave US cornflakes keeps repeating itself in the history of disruptive innovation, the kind that transforms markets. Louis Daguerre, for, instance, discovered the technique that gave US photography in the 1830s, when drops of mercury from a shattered thermometer produced a photographic image. The microwave was discovered when Percy Spencer, a scientist with Raytheon, was testing a new vacuum tube and discovered that the sweet in his pocket had melted. The artificial sweetener, saccharin, was the unintentional result of a medical scientist's work on a chemical treatment for gastric ulcers. While working for the firm 3M, researcher Art Fry had no idea he was taking the first steps towards Post-It Notes when he used bits of adhesive office paper that could be easily lifted off the page to replace the scrap paper bookmarks that kept falling out of his hymn book.

Breakthrough and disruptive innovation are rarely driven by orderly process. Usually they come out of a chaotic, haphazard mess, which is why big companies, full of managers schooled in business programmes designed to eliminate random variation and mistakes, struggle with them. In these sorts of environments, accidents are called failures and are discouraged.

It is no surprise then that research from the late British economist Paul Geroski and London Business School's Constantinos Markides found that companies that were skilled at innovation were usually not that skilled when it came to commercialisation, and vice versa. Their book, *Fast Second*, divides businesses into 'colonists' and 'consolidators'.

Small and nimble, colonists are adept at creating market niches but are terrible institution builders. Consolidators, with their strong cultures of discipline and cost control, know how to take clever ideas from other firms and turn them into massmarket items. Microsoft is a prime instance of this.

With companies spending hundreds of billions of dollars on research and development, US academics Robert Austin and Lee Devin examined how managers can encourage productive slip-ups. In their article *Accident, Intention and Expectation in the Innovation Process*, they argue that business processes actually prevent helpful mis-steps from occurring. According to their catalogue of accidents, not all false steps and mishaps are equal. Accidents, they say, come from unlikely mental associations such as memories and vague connections, looking for something and finding it in an unexpected way, looking for one thing and finding something else, and not looking for anything but finding something valuable.

Accident-prone innovation, they say, requires companies to get outside the 'cone of expectation'. It means throwing together groups from diverse backgrounds, and combining ideas in unpredictable ways, other strategies also include having systems that watch out for accidents and examine them for value, generating them when they do not happen often enough, seizing the useful ones, capturing their valuable features, and building on them to add value and give potential for useful accidents.

All this, however, requires thinking that is often counter-intuitive to the way businesses operate. In other words, it is the kind of thinking that goes against the beliefs of most business managers. It runs counter to the notion frequently pushed by consultants that you can 'harness' creativity and direct it to line up with intention. 'The cost of accidents business, people tend to call such efforts failure.'

There are tentative signs that more companies are starting to realise that failure can lead to commercial gain, and that this is part of the risk-taking that underpins innovation. Australia's largest brewing company, for example, made a bad error when it launched a new beer called Empire Lager, pitched at younger consumers. Having spent a fortune creating a beer with a sweeter taste, designing a great-looking bottle and a television campaign, Foster's was left with a drink that no-one wanted to buy. The target market was more interested in brands built up by word of mouth.

Instead of wiping the unsuccessful product launch, Fosters used this lesson learned to go on and develop other brands instead. One of them, Pure Blonde, is now ranked as Australia's fifth-largest beer brand. Unlike Empire Lager, there has been almost no promotion and its sales are generated more by word of mouth.

Other companies are taking similar steps to study their own slip-ups. Intuit, the company behind financial tools such as Quicken, holds regular 'When Learning Hurts' sessions. But this sort of transformation is never easy. In a market that focuses on the short-term, convincing employees and shareholders to tolerate failure and not play it safe is a big thing to ask.

Do the following statements agree with the claims of the writer in Reading Passage? In boxes 1-5 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

1. The delay in the process used by the Kellogg brothers affected the final product.
2. Sir Alan Hodgkin is an example of someone whose work proceeded in a logical and systematic way.
3. Daguerre is an exception to the general rule of innovation.
4. The discovery of saccharin occurred by accident during drug research.
5. The company 3M should have supported Art Fry by funding his idea of Post-It Notes.

Complete each sentence with the correct ending, A-H, below. Write the correct letter, A-H, in boxes 6-9 on your answer sheet.

6. The usual business environment

7. Geroki and Markides's book

8. Microsoft is an example of a company which

9. The origin of useful accidents

A. can be found in unusual thoughts and chance events.

B. can be taught in business schools.

C. has made a success from someone else's invention.

D. is designed to nurture differences.

E. is unlikely to lead to creative innovation

F. says that all mistakes are the same.

G. shows that businesses are good at either inventing or selling.

H. suggests ways of increasing the number of mistakes

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

10. How do Austin and Devin advise companies to get out of the 'cone of expectation'?

- A.** by decreasing the number of company systems
- B.** by forming teams of different types of people
- C.** by hiring new and creative people by holding regular brainstorming
- D.** meetings

11. In recommending 'counter-intuitive' thinking, what do Austin and Devin imply?

- A.** that failing at business is bad for staff morale
- B.** that innovation cannot be planned for
- C.** that most businesses should be devoted to avoiding mistakes
- D.** that the cost of mistakes is an important consideration

12. The writer describes the Empire Lager disaster in order to show that

- A.** success can come out of a business failure
- B.** the majority of companies now value risk-taking.
- C.** TV advertising works better on older people
- D.** young beer drinkers do not like a sweet taste

13. Pure Blonde has been more successful than Empire Lager because

A. digital media other than TV were used.

B. it was advertised under a different brand name.

C. it was launched with very little advertising.

D. the advertising budget was larger

14. The writer concludes that creating a culture that learns from mistakes

A. brings short-term financial gains.

B. can be very difficult for some companies.

C. holds no risk for workers.

D. is a popular move with shareholders.

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Reading Passage 2

Instructions to follow

You should spend 20 minutes on Questions 15–26 which are based on Reading Passage 2.

Olive Oil Production

Olive oil has been one of the staples of the Mediterranean diet for thousands of years and its popularity is growing rapidly in other parts of the world. It is one of the most versatile oils for cooking and it enhances the taste of many foods. Olive oil is the only type of vegetable/fruit oil that can be obtained from just pressing. Most other types of popular oils (corn, canola, etc.) must be processed in other ways to obtain the oil. Another important bonus is that olive oil has proven health benefits. Three basic grades of olive oil are most often available to the consumer: extra Virgin, Virgin and Olive Oil. In addition to the basic grades, olive oil differs from one country or region to another because of the types of olives that are grown, the harvesting methods, the time of the harvest, and the pressing techniques. These factors all contribute to the individual characteristics of the olive oil.

Olive trees must be properly cared for in order to achieve good economic yields. Care includes regular irrigation, pruning, fertilizing, and killing pests. Olives will survive on very poor sites with shallow soils but will grow very slowly and yield poorly. Deep soils tend to produce excessively vigorous trees, also with lower yields.

The ideal site for olive oil production is a clay loam soil with good internal and surface drainage. Irrigation is necessary to produce heavy crops and avoid alternate bearing. The site must be free of hard winter frosts because wood damage will occur at temperatures below 15°F and a lengthy spell of freezing weather can ruin any chances for a decent crop. The growing season also must be warm enough so fruits mature before even light fall frosts (usually by early November) because of potential damage to the fruit and oil quality. Fortunately, olive trees are very hardy in hot summer temperatures and they are drought tolerant.

The best olive oils hold a certificate by an independent organization that authenticates the stone ground and cold pressed extraction process. In this process, olives are first harvested by hand at the proper stage of ripeness and maturity. Experts feel that hand harvesting, as opposed to mechanical harvesting, eliminates bruising of the fruit which causes tartness and oil acidity. The olives harvested are transferred daily to the mill. This is very important because this daily transfer minimizes the time spent between picking and pressing. Some extra virgin olive oil producers are known to transfer the olives by multi-ton trucks over long distances that expose the fragile fruit to crushing weight and the hot sun, which causes the olives to begin oxidizing and thus becoming acidic.

In addition to the time lapse between harvesting and pressing, olive oil must be obtained using mechanical processes only to be considered virgin or extra virgin. If heat and/or chemical processes are used to produce the olive oil or if the time lapse is too long, it cannot be called virgin or extra virgin.

Once at the mill, the leaves are sucked away with air fans and the olives are washed with circulating potable water to remove all impurities. The first step of extraction is mashing the olives to create a paste. The oil, comprising 20% to 30% of the olive, is nestled in pockets within the fruit's cells. The olives are crushed in a mill with two granite millstones rolling within a metal basin. Crushing and mixing the olives releases the oil from the cells of the olive without heating the paste. A side shutter on the mill's basin allows the mixed olive paste to be discharged and applied to round mats. The mats are stacked and placed under the head of a hydraulic press frame that applies downward pressure and extracts the oil. The first pressing yields the superior quality oil, and the second and third pressings produce inferior quality oil. Some single estate producers collect the oil that results from just the initial crushing while many other producers use an additional step to extract more oil. The olive pulp is placed on mats constructed with hemp or polypropylene that are stacked and then pressed to squeeze the pulp. Oil and water filter through the mats to a collection tank below. The water and oil are then separated in a centrifuge.

Regardless of the method used for the first pressing, the temperature of the oil during production is extremely important in order to maintain the distinct characteristics of the oil. If the temperature of the oil climbs above 86°F, it will be damaged and cannot be considered cold-pressed.

The first pressing oil contains the most “polyphenols”, substances that have been found to be powerful antioxidants capable of protecting against certain types of disease. The polyphenols are not the only substances in the olive with health-promoting effects, but they are quite unique when compared to other commonly used culinary oils such as sunflower and soy. It is these polyphenols that really set extra virgin olive oils apart from any other oil and any other form of olive oil. The more refined the olive oil is, the smaller the quantity of polyphenols.

The result of the producers’ efforts is a cold pressed extra virgin olive oil with high quality standards and organoleptic characteristics, which give the oil its health-protective and aromatic properties.

Choose the correct letters A, B, C or D.

15. According to the text, which of the following does NOT affect the individual features of olive oils from different regions?

- A.** Olive varieties
- B.** Access to water
- C.** The date of the picking
- D.** Picking techniques

16. According to the text, which of the following is NOT part of olive tree management?

- A.** Feeding
- B.** Careful watering
- C.** Replanting
- D.** Killing parasites

17. According to the text, what is the main danger of frost?

- A. The olives produced will be small in size
- B. It kills the olive trees
- C. The fruit won't mature
- D. Not enough fruit will be produced

18. According to the text, which of the following does NOT affect the "extra virgin" olive oil certification?

- A. Using water in the extraction process
- B. Which pressing the oil is taken from
- C. The time gap between tree and bottle
- D. The temperature of the extraction process

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

In boxes 32–34 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 |

19. Olive trees don't need a regular supply of water to survive.

20. No other cooking oils apart from olive oil contain polyphenols.

21. Damage to olives before they are pressed can affect the taste of the oil.

Complete the flow chart below. Use NO MORE THAN THREE WORDS from Passage for each answer.

The Olive Oil Production Process

Stage 1: Olive trees should be planted in **(22)** earth with good drainage in a year round warm climate.

Stage 2: Trees must be carefully irrigated and fertilized and **(23)** must be controlled if you want to get **(24)** that will make you profit.

Stage 3: Olives are crushed to form a **(25)**

Stage 4: The paste is put on round mats inside a **(26)** Water is blended in with the paste as it's pressed and a water/oil mixture escapes.

Stage 5: Water is removed by a **(27)** process. The Oil is then bottled and distributed.

Reading Passage 3

Undoing Our Emotions

A. Three generations ago, 180 young women wrote essays describing why they wanted to join a convent (a religious community of nuns). Years later, a team of psychological researchers came across these autobiographies in the convent's archives. The researchers were seeking material to confirm earlier studies hinting at a link between having a good vocabulary in youth and a low risk of Alzheimer's disease in old age. What they found was even more amazing. The researchers found that, although the young women were in their early twenties when they wrote their essays, the emotions expressed in these writings were predictive of how long they would live: those with upbeat autobiographies lived more than ten years longer than those whose language was more neutral.

Deborah Danner, a psychologist at the University of Kentucky who spearheaded the study, noted that the results were particularly striking because all members of the convent lived similar lifestyles, eliminating many variables that normally make it difficult to interpret longevity studies. It was a phenomenal finding', she says. 'A researcher gets a finding like that maybe once in a lifetime.' However, she points out that no one has been able to determine why positive emotions might have such life-extending effects.

B. Barbara Fredrickson, Professor of Psychology at the University of Michigan, believes that part of the answer is the 'undo effect'. According to this theory, positive emotions help you live longer by shutting down the effects of negative ones. Fredrickson's theory begins with the observation that negative emotions, like fear and stress, enhance our flight-or-fight response to very real threats. However, even when the emergency is gone, negative emotions produce lingering effects. Brooks Gump, a stress researcher at the State University of New York, explains that one of these effects is excessive cardiovascular reactivity. Behaviourally, Gump says, this reactivity is related to excessive vigilance: the state of being constantly on guard for potential dangers. Not only is it physically draining to live in a perpetual state of high vigilance, but high cardiovascular reactivity could be linked to increased chances of a heart attack.

C. Fredrickson believes positive emotions work their magic by producing a rapid unwinding of pent-up tension, restoring the system to normal. People who quickly bounce back from stress often speed the process by harnessing such emotions as amusement, interest, excitement, and happiness, she says. To test her theory, Fredrickson told a group of student volunteers that they had only a few minutes to prepare a speech that would be critiqued by experts. After letting the students get nervous about that, Fredrickson then told them they wouldn't actually have to deliver their speeches. She monitored heart rates and blood pressure.

Not surprisingly, all students got nervous about their speeches, but those who viewed the experiment with good-humored excitement saw their heart rates return to normal much more quickly than those who were angry about being fooled. In a second experiment, Fredrickson reported that even those who normally were slow to bounce back could be coached to recover more quickly by being told to view the experiment as a challenge, rather than a threat.

D. Fredrickson believes that positive emotions make people more flexible and creative. Negative emotions, she says, give a heightened sense of detail that makes us hypersensitive to minute clues related to the source of a threat. But that also produces 'tunnel vision' in which we ignore anything unrelated to the danger. Fredrickson speculated that just as positive emotions can undo the cardiovascular effects of negative ones, they may also reverse the attention-narrowing effects of negative feelings: broadening our perspectives.

E. To verify her theory, Fredrickson showed a group of students some film clips—some saw frightening clips, some saw humorous ones or peaceful ones. They then did a matching test in which they were shown a simple drawing and asked which of two other drawings it most resembled. The drawings were designed so that people would tend to give one answer if they focused on details, and another answer if they focused on the big picture. The results confirmed Fredrickson's suspicion that positive emotions affect our perceptions. Students who had seen the humorous or peaceful clips were more likely to match objects according to broad impressions.

F. This fits with the role that positive emotions might have played in early human tribes, Fredrickson says. Negative emotions provided focus, which was important for surviving in life-or-death situations, but the ability to feel positive emotions was of long-term value because it opened the mind to new ideas. Humour is a good example of this. She says: 'The emotions are transient, but the resources are durable. If you building a friendship through being playful, that friendship is a lasting resource.' So while the good feelings may pass, the friendship remains. On an individual level, Fredrickson's theory also says that taking time to do things that make you feel happy isn't simply self-indulgent. Not only are these emotions good for the individual, but they are also good for society.

G. Other researchers are intrigued by Fredrickson's findings. Susan Folkman, of the University of California, has spent two decades studying how people cope with long-term stresses such as bereavement, or caring for a chronically ill child. Contrary to what one might expect, she says, these people frequently experience positive emotions. 'These emotions aren't there by accident', she adds. 'Mother Nature doesn't work that way, I think that they give a person time out from the intense stress to restore their resources and keep going. This is very consistent with Fredrickson's work.'

Reading Passage has seven sections, A-G. Which section contains the following information? Write the correct letter, A-G, in boxes 1-6 on your answer sheet. NB You may use any letter more than once.

- 28. a conclusion that it is possible to train people to deal with anxiety
conclusive evidence that lifespan can be influenced by emotions.
- 29. an explanation of the way negative emotions affect what people
concentrate on
- 30. an experiment that showed how a positive outlook can help people adjust
to
- 31. a stressful situation faster than others
- 32. a discovery beyond what researchers were investigating
- 33. an experiment where the nature of a material seen by participants affected
the way they performed a task

Look at the following statements (Questions 7–10) and the list of researchers below. Match each statement with the correct researcher, A–D. Write the correct letter, A–D, in boxes 7–10 on your answer sheet. You may use any letter more than once.

List of Researchers

A. Deborah Danner

B. Barbara Fredrickson

C. Brooks Gump

D. Susan Folkman

34. People whose daily lives are stressful often have surprisingly positive emotions.

35. The body's reaction to a crisis may trigger a life-threatening event.

36. It is unusual to have a study group whose circumstances were very alike.

37. The reasons for a link between positive emotions and a longer life have not been established.

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

In early tribes, negative emotions gave humans the **(38)** that they needed to deal with emergencies. Fredrickson believes that a passing positive emotion can lead to an enduring asset such as a **(39)** which is useful in times to come. Fredrickson also believes that both individuals and **(40)** benefit from positive emotions.



Practice Test 3

Reading Passage 1

BAKELITE – The birth of modern plastics

In 1907, Leo Hendrick Baekeland, a Belgian scientist working in New York, discovered and patented a revolutionary new synthetic material. His invention, which he named 'Bakelite', was of enormous technological importance, and effectively launched the modern plastics industry.

The term 'plastic' comes from the Greek *plassein*, meaning 'to mould'. Some plastics are derived from natural sources, some are semi-synthetic (the result of chemical action on a natural substance), and some are entirely synthetic, that is, chemically engineered from the constituents of coal or oil. Some are 'thermoplastic', which means that, like candlewax, they melt when heated and can then be reshaped. Others are 'thermosetting': like eggs, they cannot revert to their original viscous state, and their shape is thus fixed for ever, Bakelite had the distinction of being the first totally synthetic thermosetting plastic. The history of today's plastics begins with the discovery of a series of semi-synthetic thermoplastic materials in the mid-nineteenth century. The impetus behind the development of these early plastics was generated by a number of factors – immense technological progress in the domain of chemistry, coupled with wider cultural changes, and the pragmatic need to

find acceptable substitutes for dwindling supplies of 'luxury' materials such as tortoiseshell and ivory.

Baekeland's interest in plastics began in 1885 when, as a young chemistry student in Belgium, he embarked on research into phenolic resins, the group of sticky substances produced when phenol (carbolic acid) combines with an aldehyde (a volatile fluid similar to alcohol). He soon abandoned the subject, however, only returning to it some years later. By 1905 he was a wealthy New Yorker, having recently made his fortune with the invention of a new photographic paper. While Baekeland had been busily amassing dollars, some advances had been made in the development of plastics. The years 1899 and 1900 had seen the patenting of the first semi-synthetic thermosetting material that could be manufactured on an industrial scale. In purely scientific terms, Baekeland's major contribution to the field is not so much the actual discovery of the material to which he gave his name, but rather the method by which a reaction between phenol and formaldehyde could be controlled, thus making possible its preparation on a commercial basis. On 13 July 1907, Baekeland took out his famous patent describing this preparation, the essential features of which are still in use today.

The original patent outlined a three-stage process, in which phenol and formaldehyde (from wood or coal) were initially combined under vacuum inside a large egg-shaped kettle. The result was a resin known as Novalak, which became soluble and malleable when heated. The resin was allowed to

cool in shallow trays until it hardened, and then broken up and ground into powder.

Other substances were then introduced: including fillers, such as woodflour, asbestos or cotton, which increase strength and moisture resistance, catalysts (substances to speed up the reaction between two chemicals without joining to either) and hexa, a compound of ammonia and formaldehyde which supplied the additional formaldehyde necessary to form a thermosetting resin. This resin was then left to cool and harden, and ground up a second time. The resulting granular powder was raw Bakelite, ready to be made into a vast range of manufactured objects. In the last stage, the heated Bakelite was poured into a hollow mould of the required shape and subjected to extreme heat and pressure; thereby 'setting' its form for life.

The design of Bakelite objects, everything from earrings to television sets, was governed to a large extent by the technical requirements of the moulding process. The object could not be designed so that it was locked into the mould and therefore difficult to extract. A common general rule was that objects should taper towards the deepest part of the mould, and if necessary the product was moulded in separate pieces. Moulds had to be carefully designed so that the molten Bakelite would flow evenly and completely into the mould. Sharp corners proved impractical and were thus avoided, giving rise to the smooth, 'streamlined' style popular in the 1930s. The thickness of the walls of the mould was also crucial: thick walls took longer to cool and harden, a factor

which had to be considered by the designer in order to make the most efficient use of machines.

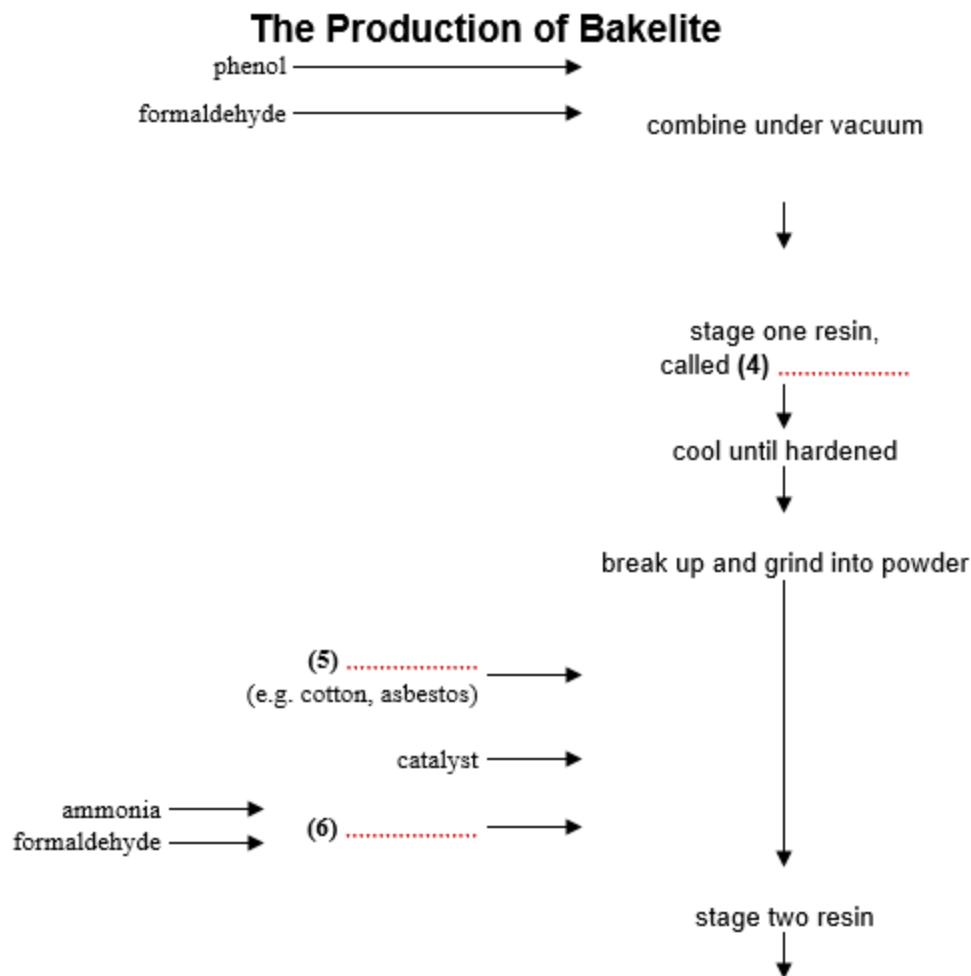
Bakeland's invention, although treated with disdain in its early years, went on to enjoy an unparalleled popularity which lasted throughout the first half of the twentieth century. It became the wonder product of the new world of industrial expansion – 'the material of a thousand uses'. Being both non-porous and heat-resistant, Bakelite kitchen goods were promoted as being germ-free and sterilisable. Electrical manufacturers seized on its insulating properties, and consumers everywhere relished its dazzling array of shades, delighted that they were now, at last, no longer restricted to the wood tones and drab browns of the pre-plastic era. It then fell from favour again during the 1950s, and was despised and destroyed in vast quantities. Recently, however, it has been experiencing something of a renaissance, with renewed demand for original Bakelite objects in the collectors' marketplace, and museums, societies and dedicated individuals once again appreciating the style and originality of this innovative material.

Complete the summary. Choose ONE WORD ONLY from the passage for each answer. Write your answers in boxes 1–3 on your answer sheet.

Some plastics behave in a similar way to (1) in that they melt under heat and can be moulded into new forms. Bakelite was unique because it was the first material to be both entirely (2) in origin, and thermosetting. There were several reasons for the research into plastics in the nineteenth century, among them the great advances that had been made in the field of (3) and the search for alternatives to natural resources like ivory.



Complete the flow-chart. Choose ONE WORD ONLY from the passage for each answer. Write your answers in boxes 4-8 on your answer sheet.



Write your answers in boxes 9 and 10 on your answer sheet.

Which TWO of the following factors influencing the design of Bakelite objects are mentioned in the text?

- A.** the function which the object would serve
- B.** the ease with which the resin could fill the mould
- C.** the facility with which the object could be removed from the mould
- D.** the limitations of the materials used to manufacture the mould
- E.** the fashionable styles of the period

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 is true according to the passage |
| FALSE | if the statement is false according to the passage |
| NOT GIVEN | if the information is not given in the passage |

- 11.** Modern-day plastic preparation is based on the same principles as that patented in 1907.
- 12.** Bakelite was immediately welcomed as a practical and versatile material.
- 13.** Bakelite was only available in a limited range of colours.

Reading Passage 2

John McCrone reviews recent research on humour

The joke comes over the headphones: 'Which side of a dog has the most hair? The left.' No, not funny. Try again. 'Which side of a dog has the most hair? The outside.' Hah! The punchline is silly yet fitting, tempting a smile, even a laugh. Laughter has always struck people as deeply mysterious, perhaps pointless. The writer Arthur Koestler dubbed it the luxury reflex: 'unique in that it serves no apparent biological purpose'.

Theories about humour have an ancient pedigree. Plato expressed the idea that humour is simply a delighted feeling of superiority over others. Kant and Freud felt that joke-telling relies on building up a psychic tension which is safely punctured by the ludicrousness of the punchline. But most modern humour theorists have settled on some version of Aristotle's belief that jokes are based on a reaction to or resolution of incongruity, when the punchline is either a nonsense or, though appearing silly, has a clever second meaning.

Graeme Ritchie, a computational linguist in Edinburgh, studies the linguistic structure of jokes in order to understand not only humour but language understanding and reasoning in machines. He says that while there is no single format for jokes, many revolve around a sudden and surprising conceptual shift. A comedian will present a situation followed by an unexpected interpretation that is also apt.

So even if a punchline sounds silly, the listener can see there is a clever semantic fit and that sudden mental 'Aha!' is the buzz that makes us laugh. Viewed from this angle, humour is just a form of creative insight, a sudden leap to a new perspective.

However, there is another type of laughter, the laughter of social appeasement and it is important to understand this too. Play is a crucial part of development in most young mammals. Rats produce ultrasonic squeaks to prevent their scuffles turning nasty. Chimpanzees have a 'play-face' – a gaping expression accompanied by a panting 'ah, ah' noise. In humans, these signals have mutated into smiles and laughs. Researchers believe social situations, rather than cognitive events such as jokes, trigger these instinctual markers of play or appeasement. People laugh on fairground rides or when tickled to flag a play situation, whether they feel amused or not.

Both social and cognitive types of laughter tap into the same expressive machinery in our brains, the emotion and motor circuits that produce smiles and excited vocalisations. However, if cognitive laughter is the product of more general thought processes, it should result from more expansive brain activity.

Psychologist Vinod Goel investigated humour using the new technique of 'single event' functional magnetic resonance imaging (fMRI). An MRI scanner uses magnetic fields and radio waves to track the changes in oxygenated blood that accompany mental activity. Until recently, MRI scanners needed several minutes of activity and so could not be used to track rapid thought processes such as comprehending a joke. New developments now allow half-second 'snapshots' of all sorts of reasoning and problem-solving activities.

Although Goel felt being inside a brain scanner was hardly the ideal place for appreciating a joke, he found evidence that understanding a joke involves a widespread mental shift. His scans showed that at the beginning of a joke the listener's prefrontal cortex lit up, particularly the right prefrontal believed to be critical for problem solving. But there was also activity in the temporal lobes at the side of the head (consistent with attempts to rouse stored knowledge) and in many other brain areas. Then when the punchline arrived, a new area sprang to life -the orbital prefrontal cortex. This patch of brain tucked behind the orbits of the eyes is associated with evaluating information.

Making a rapid emotional assessment of the events of the moment is an extremely demanding job for the brain, animal or human. Energy and arousal levels may need, to be retuned in the blink of an eye. These abrupt changes will produce either positive or negative feelings. The orbital cortex, the region that becomes active in Goel's experiment, seems the best candidate for the site that feeds such feelings into higher-level thought processes, with its close connections to the brain's sub-cortical arousal apparatus and centres of metabolic control.

All warm-blooded animals make constant tiny adjustments in arousal in response to external events, but humans, who have developed a much more complicated internal life as a result of language, respond emotionally not only to their surroundings, but to their own thoughts. Whenever a sought-for answer snaps into place, there is a shudder of pleased recognition. Creative discovery being pleasurable, humans have learned to find ways of milking this natural response. The fact that jokes tap into our general evaluative machinery explains why the line between funny and disgusting, or funny and frightening, can be so fine. Whether a joke gives pleasure or pain depends on a person's outlook.

Humour may be a luxury, but the mechanism behind it is no evolutionary accident. As Peter Derks, a psychologist at William and Mary College in Virginia, says: 'I like to think of humour as the distorted mirror of the mind. It's creative, perceptual, analytical and lingual. If we can figure out how the mind processes humour, then we'll have a pretty good handle on how it works in general.

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

In boxes 14–20 on your answer sheet, write

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

14. Arthur Koestler considered laughter biologically important in several ways.

15. Plato believed humour to be a sign of above-average intelligence.

16. Kant believed that a successful joke involves the controlled release of nervous energy.

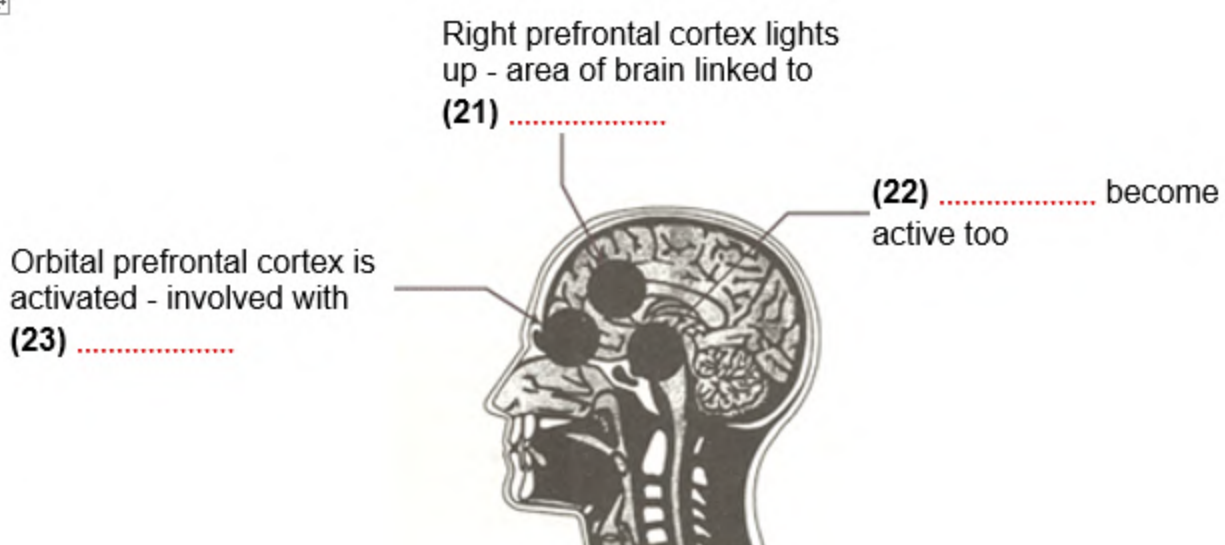
17. Current thinking on humour has largely ignored Aristotle's view on the subject.

18. Graeme Ritchie's work links jokes to artificial intelligence.

19. Most comedians use personal situations as a source of humour.

20. Chimpanzees make particular noises when they are playing.

The diagram below shows the areas of the brain activated by jokes. Label the diagram. Choose NO MORE THAN TWO WORDS from the passage for each answer.



- Complete each sentence with the correct ending A-G below.
- Write the correct letter A-G in boxes 24-27 on your answer sheet.

- A. react to their own thoughts.
- B. helped create language in humans.
- C. respond instantly to whatever is happening.
- D. may provide valuable information about the operation of the brain.

- E. cope with difficult situations.
- F. relate to a person's subjective views.
- G. led our ancestors to smile and then laugh.

24. One of the brain's most difficult tasks is to

25. Because of the language they have developed, humans

26. Individual responses to humour

27. Peter Derks believes that humour

Student Space:



Reading Passage 3

The Birth of Scientific English

World science is dominated today by a small number of languages, including Japanese, German and French, but it is English which is probably the most popular global language of science. This is not just because of the importance of English-speaking countries such as the USA in scientific research; the scientists of many non-English-speaking countries find that they need to write their research papers in English to reach a wide international audience. Given the prominence of scientific English today, it may seem surprising that no one really knew how to write science in English before the 17th century. Before that, Latin was regarded as the lingua franca for European intellectuals.

The European Renaissance (c. 14th–16th century) is sometimes called the ‘revival of learning’, a time of renewed interest in the ‘lost knowledge’ of classical times. At the same time, however, scholars also began to test and extend this knowledge. The emergent nation states of Europe developed competitive interests in world exploration and the development of trade. Such expansion, which was to take the English language west to America and east to India, was supported by scientific developments such as the discovery of magnetism (and hence the invention of the compass), improvements in cartography and – perhaps the most important scientific revolution of them

all – the new theories of astronomy and the movement of the Earth in relation to the planets and stars, developed by Copernicus (1473–1543).

England was one of the first countries where scientists adopted and publicised Copernican ideas with enthusiasm. Some of these scholars, including two with interests in language – John Wall’s and John Wilkins – helped Found the Royal Society in 1660 in order to promote empirical scientific research.

Across Europe similar academies and societies arose, creating new national traditions of science. In the initial stages of the scientific revolution, most publications in the national languages were popular works, encyclopaedias, educational textbooks and translations. Original science was not done in English until the second half of the 17th century. For example, Newton published his mathematical treatise, known as the Principia, in Latin, but published his later work on the properties of light – Opticks – in English.

There were several reasons why original science continued to be written in Latin. The first was simply a matter of audience. Latin was suitable for an international audience of scholars, whereas English reached a socially wider, but more local, audience. Hence, popular science was written in English.

A second reason for writing in Latin may, perversely, have been a concern for secrecy. Open publication had dangers in putting into the public domain preliminary ideas which had not yet been fully exploited by their ‘author’. This

growing concern about intellectual property rights was a feature of the period – it reflected both the humanist notion of the individual, rational scientist who invents and discovers through private intellectual labour, and the growing connection between original science and commercial exploitation.

There was something of a social distinction between ‘scholars and gentlemen’ who understood Latin, and men of trade who lacked a classical education. And in the mid-17th century it was common practice for mathematicians to keep their discoveries and proofs secret, by writing them in cipher, in obscure languages, or in private messages deposited in a sealed box with the Royal Society. Some scientists might have felt more comfortable with Latin precisely because its audience, though international, was socially restricted. Doctors clung the most keenly to Latin as an ‘insider language’.

A third reason why the writing of original science in English was delayed may have been to do with the linguistic inadequacy of English in the early modern period. English was not well equipped to deal with scientific argument. First, it lacked the necessary technical vocabulary. Second, it lacked the grammatical resources required to represent the world in an objective and impersonal way, and to discuss the relations, such as cause and effect, that might hold between complex and hypothetical entities.

Fortunately, several members of the Royal Society possessed an interest in language and became engaged in various linguistic projects. Although a proposal in 1664 to establish a committee for improving the English language came to little, the society's members did a great deal to foster the publication of science in English and to encourage the development of a suitable writing style. Many members of the Royal Society also published monographs in English. One of the first was by Robert Hooke, the society's first curator of experiments, who described his experiments with microscopes in *Micrographia* (1665). This work is largely narrative in style, based on a transcript of oral demonstrations and lectures.

In 1665 a new scientific journal, *Philosophical Transactions*, was inaugurated. Perhaps the first international English-language scientific journal, it encouraged a new genre of scientific writing, that of short, focused accounts of particular experiments.

The 17th century was thus a formative period in the establishment of scientific English. In the following century much of this momentum was lost as German established itself as the leading European language of science. It is estimated that by the end of the 18th century 401 German scientific journals had been established as opposed to 96 in France and 50 in England.

However, in the 19th century scientific English again enjoyed substantial lexical growth as the industrial revolution created the need for new technical vocabulary, and new, specialised, professional societies were instituted to promote and publish in the new disciplines.

Complete the summary. Choose NO MORE THAN TWO WORDS from the passage for each answer. Write your answers in boxes 28–34 on your answer sheet.

In Europe modern science emerged at the same time as the nation state. At first, the scientific language of choice remained **(28)** It allowed scientists to communicate with other socially privileged thinkers while protecting their work from unwanted exploitation. Sometimes the desire to protect ideas seems to have been stronger than the desire to communicate them, particularly in the case of mathematicians and **(29)** In Britain, moreover, scientists worried that English had neither the **(30)** nor the **(31)** to express their ideas. This situation only changed after 1660 when scientists associated with the **(32)** set about developing English. An early scientific journal fostered a new kind of writing based on short descriptions of specific experiments. Although English was then overtaken by **(33)** it developed again in the 19th century as a direct result of the **(34)**

Do the following statements agree with the information given in Reading Passage 3? In boxes 35–37 on your answer sheet, write

TRUE **if the statement is true according to the passage**

FALSE **if the statement is false according to the passage**

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

35. There was strong competition between scientists in Renaissance Europe.

36. The most important scientific development of the Renaissance period was the discovery of magnetism.

37. In 17th-century Britain, leading thinkers combined their interest in science with an interest in how to express ideas.

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

Science written in the first half of the 17th century		
Language used	Latin	English
Type of science	Original	(38).....
Examples	(39).....	Encyclopaedias
Target audience	International scholars	(40)but socially wider

Practice Test 4

Reading Passage 1

Fordlandia

Natural latex, or rubber, comes from the sap of rubber trees. Native to the Amazon region of South America, they had long been a Brazilian monopoly, and the boom in wild rubber had made many remote jungle towns rich, until thousands of seeds of the tree were smuggled out by an entrepreneurial Brit, Henry Wickham. These were used to start plantations throughout British East-Asia, where the trees, facing none of their natural insect or fungal enemies, thrived. Thus, the Brazilian rubber boom crashed, leaving control of the world's supplies with the plantation owners in Malaysia (where to this day, most of the world's natural rubber is still produced).

But in the late 1920s, the automobile tycoon, Henry Ford, had a vision. He believed in vertical integration—that is, a supply chain of car parts and products united through his ownership. With his factories producing hundreds of thousands of cars, each of them needing rubber tyres, Ford wanted his own source of rubber and resented dealing with the British plantation interests. He therefore decided to buy a huge tract of Amazonian rainforest, where he would transplant his American workers and lifestyle, in order to make the largest rubber plantation on the planet. It would be called Fordlandia — ambitious, grandiose, and doomed from the beginning.

The first mistake was to hire a rather untrustworthy Brazilian to scout for the best location in the Amazon. This man recommended a damp, rocky, and infertile series of hillsides near the Tapajos river, a tributary of the wide and mighty Amazon. In 1928, Ford blindly acquired a 10,000-square-kilometre concession and immediately ordered an immense amount of infrastructure to be built—at huge cost.

To this end, earth-moving equipment arrived, tractors, stump-pullers, trains, prefabricated living quarters, and food-making equipment. The surface jungle was cleared, scores of Ford's employees were relocated, and out of this wilderness sprang an instant slice of America, complete with a modern hospital, library, hotels, ice cream makers, and row upon row of prefabricated houses positioned along nicely paved streets.

The second big mistake was that, incredibly, Ford never thought to consult trained horticulturists. He naively assumed that his own company engineers, who had proven their worth in the production of cars, would prove equally adept at this agricultural endeavour. Thus, they planted the rubber trees thickly together, believing that they would nourish in their home environment. However, in the Amazonian jungle, wild rubber trees are actually few and far between – a defence against the prodigious insect life which chews, drills, sucks, and bites. In such environments, monocultural farming approaches are dubious at best. Ford's young rubber trees had no sooner appeared from the ground than they were attacked by caterpillars, ants, red spiders, and most significantly, South American leaf blight, which, to this day, limits the number of rubber plantations in this, the tree's native land.

The next problem was based on cultural differences. The newly planted fields needed hundreds of local workers, who, although well paid, were expected to follow Ford's patronising vision of a healthy lifestyle. Instead of the local custom of working before and after the roastingly hot middle of the day, Ford's workers were forced to do the standard company 9-to-5 shift. Similarly, they had to eat American food and take part in weekend activities considered sufficiently wholesome, such as poetry reading and square-dancing. Alcohol was strictly forbidden at work, in the housing estates, or within Fordlandia's sphere of influence. After a year denied their local customs, the disgruntled workers had had enough, and a riot followed, leaving the hapless American staff scurrying into the jungle to escape injury. It was all finally quelled with the arrival of the Brazilian army.

After three years, and no significant quantity of rubber to show for it all, Ford did what he should have done from the beginning—hired a trained horticulturist, who ultimately concluded that, in whatever manner the rubber trees were planted, the land was not appropriate for their cultivation. With such humiliating news, anyone less stubborn would have given up, yet Ford purchased another tract of land some fifty miles downstream of the Tapajos river—flatter, drier, better drained, and more suitable for machinery — and started all over again. This time, Ford imported blight-resistant Malaysian rubber trees, and much more horticultural expertise. Still, 10 years later, in 1942, the operation could only produce a paltry 750 tons of latex rubber. Ford's factories were hoping for almost 40,000.

The final nail in the coffin was the development of synthetic rubber, and in 1945, it was time to admit defeat, although it was not Ford who did so. By that time he was old and ill and had relinquished control of his company to his grandson, Henry Ford II, who closed down the entire rubber operation. The holdings were sold back to the Brazilian government for a pittance, leaving a loss of over \$20 million (which would be over 10 times that much in today's terms) — a complete and utter financial disaster.

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

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. Henry Wickham destroyed the Brazilian rubber boom.
2. Rubber trees are well suited to Malaysia.
3. The Tapajos river is very wide.
4. Fordlandia may have succeeded.

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

	Fordlandia's problems	Result of these
One	First piece of land not (5) _____ for rubber trees.	No (6) _____ of rubber produced
Two	(7) _____ were unfamiliar with farming	An unwise (8) _____ approach
Three	Not following (9) _____	A (10) _____

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

The natural enemy of rubber trees is **(11)**.....

Plantations definitely need the skills of **(12)**.....

Fordlandia closed down upon the invention of **(13)**.....

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Reading Passage 2

Shakespeare: The Authorship Question

If one were asked to name the greatest writer in the English language, few would hesitate in answering, 'William Shakespeare'. Although he dabbled in poetry, his central claim to fame is his plays, almost 40 of them. Extensively studied, constantly performed, adapted, and reinterpreted into modern contexts, Shakespeare's plays remain as popular as ever. But did he write them, that is the question?

The immediate reaction is to wonder why anyone would even ask this. Although there is little documentary evidence of Shakespeare's life, what does exist unequivocally identifies him as the author of the plays. His name appears on title pages of a few publications, printing orders, and theatrical documents, and is mentioned by contemporary commentators and a fellow playwright, both publicly and in private memoirs, in every case in a way that is consistent with Shakespeare being the author. Consequently, for hundreds of years, no one held any doubts whatsoever on the matter.

There it would have remained, had Shakespeare's post-humous reputation not reached such lofty heights. With the widespread acceptance of his dramatic genius, apparent inconsistencies were perceived. Chief among these was how such literature could originate from, as viewed by some, a humble ill-educated country bumpkin and bawdy stage entrepreneur, about whom so little was known. Details of Shakespeare's schooling and upbringing in the small market town of Stratford-Upon-Avon are non-existent, but among his surviving children there is no evidence of strong education or even basic literacy skills. No original written texts have ever been found, and Shakespeare's six surviving signatures are all unsteady, showing inconsistent style and spelling.

Most tellingly for some are the circumstances of Shakespeare's death. Firstly, there is his will, a commonplace and unpoetic document, making no mention whatsoever of the considerable body of papers, reference books, and miscellaneous plays, poetry, and writings that one would expect a playwright of Shakespeare's stature to possess. Apparently he was unconcerned about the rights to both his own plays (many of which remained unpublished at that time) and his own literary heritage. The second fact is that, upon his death, there were no eulogies, mourning notices, or testimonies from those who knew him. All this seems very perplexing for a playwright and poet who, whilst not necessarily considered the most polished, professional, or learned by his peers, had nevertheless achieved considerable wealth, respect, and fame, even in his own lifetime.

Such thoughts first became public in the mid-19th century — and have never really stopped, developing the grand title, 'The Shakespeare authorship question', and dividing those interested into two sides: the Stratfordians: those who support Shakespeare as the author, and the anti-Stratfordians: those who do not. For the latter body, the only way to overcome the documentary evidence in support of Shakespeare's authorship is to assume a conspiracy existed among a select group of people, perhaps including Shakespeare himself, in order to protect the real author's identity. So who was he (and in those times, it goes without saying that it could not be a 'she')?

The anti-Stratfordians search for a university-educated, upper-class candidate — someone who would inevitably have had knowledge of aristocratic manners and mores, and familiarity with the proceedings and politics of the royal court, all of which so often appear in the plays themselves. The reason for the conspiracy is that producing such works, full with themes of royal revenge and murder, intrigue and assassination, mob rule and rebellion, could render a nobleman liable to the dangerous charge of subversion.

Some have also argued that, at that time, it was considered socially unacceptable for the upper-class to publish creative literature for monetary gain, being instead confined to circulating their writings among their peers, or seeing them performed among courtly audiences.

There are four leading contenders. Sir Francis Bacon was the first nominated, and certainly had the best intellectual credentials, being well-versed in law, philosophy, essay writing, and science. However, since the 1920s, Edward de Vere, an aristocratic earl who patronised and sponsored actors and the arts, has become the leading contender. Only slightly less favoured is a fellow playwright, Christopher Marlowe. Born into the same social class as Shakespeare, he at least went to university, although his early death in a tavern brawl presents difficulties — unless one assumes his demise was fabricated to allow him to continue writing under Shakespeare's name. Finally, there is William Stanley, another aristocratic earl. Contemporary accounts attest to the fact that he wrote plays for the common people, and throughout his life he displayed interest and support for the theatre.

And the evidence? Mere historical and literary conjecture, vague similarities in writing styles, and loose coincidences between the lives and travels of these contenders when compared to the scenes and settings of many of the plays in question. In other words, nothing solid at all. The case is so flimsy that reputable scholars barely discuss it, and rightly so. Although capable of attracting public interest and selling books, unless some real evidence emerges, I would say that the authorship question is not questionable at all.

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

TRUE if the statement agrees with the information

FALSE if the statement contradicts the information

NOT GIVEN If there is no information on this

14. Shakespeare's name appears on many documents.

15. He was considered a genius even in his lifetime.

16. He was well-educated.

17. When he died, not all the plays had been published.

Complete the sentences. Choose ONE WORD from the passage for each answer.

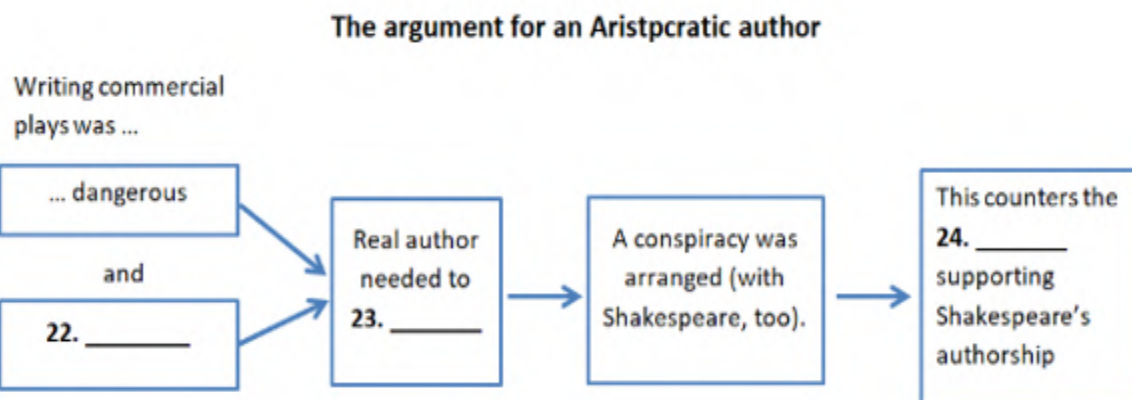
We have six examples of Shakespeare's **(18)**.....

He used ordinary language in his **(19)**.....

The lack of public grieving upon his death is **(20)**.....

Those who believe Shakespeare was not the author are called **(21)**.....

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



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

25. Which sentence was mentioned in the reading passage?

- A.** Sir Francis Bacon was the smartest of the candidates.
- B.** Edward de Vere was in the same social class as Shakespeare.
- C.** Christopher Marlowe is the prime candidate.
- D.** William Stanley wrote plays for courtly audiences.

26. The author believes that Shakespeare

- A.** did not write the plays.
- B.** may not have written the plays.
- C.** probably wrote the plays.
- D.** certainly wrote the plays.

Reading Passage 3

The Immunisation Controversy

A. Carl Sagan once said, 'Science loses ground to pseudo-science because the latter seems to offer more comfort.' Yes, hard science, proven facts, and indisputable logic are often not sufficiently consoling, and thus routinely eliminated from the equation. Never, though, has this been more distressing than with the so-called 'anti-vaccination' movement. The end result has been the needless death of very young children, the most helpless of bystanders, and yet it seems there is no end in sight.

B. It is strange to believe that vaccination, with such a long and distinguished track record, is now under assault. Smallpox, for example, had killed over half a billion human beings throughout history but was eradicated — completely removed from the face of the Earth — via immunisation programs. Similarly, polio, rubella, whooping cough, measles, and a slew of other diseases which routinely decimated the youth are now, virtually, things of the past. The days of high infant mortality, short life spans, and nasty brutish lives are indeed long gone, and we owe it all to this crucial insight into disease prevention.

C. And this is part of the problem. With the once terrible epidemics lying outside of human memory, a growing number of people are convinced that vaccinations are no longer necessary, and that the small risk of adverse effects outweighs the benefits. One reason for this belief is that many genetic disorders related to brain impairment often emerge at around two years of age — that is, the same period in which babies receive vaccinations. If one in a hundred babies is destined to develop autism among a vaccinated group, then observable symptoms of the problem will likely appear after a vaccination shot, leading distraught parents to link one event to the other.

D. This misattribution is compounded by the Internet, which now hosts a sprawling forum of anti-vaccination lobby groups and their websites, full with unsubstantiated claims, fraudulent research, anecdotal evidence, and the passionate tirades of multitudes, firmly convinced of the correctness of their case. Authority is undermined, statistics ignored, and hard science excluded. Is it so surprising? If creationists and alternative medicine practitioners can gain respectability and widespread public and political support, so too can the pseudo-science of the anti-vaccinationists. When faced with this wave of propaganda, it would be hard for many parents, motivated by the intense desire to protect their children, not to be influenced.

E. At this point, it must be clarified that there is no credible evidence whatsoever to support the anti-vaccinationists' claims. Over a score of peer-reviewed studies have found nothing to link the MMR (measles/mumps/rubella) vaccine to autism, or even the more subtle neurological problems, and every reason to continue with vaccinations. The so-called increase in autism so often attributed to vaccinations merely results from more accurate diagnoses. Children who in the past would have been labeled as 'retarded' or 'slow' are now identified as having one of the three main grades of autism (which is probably genetically determined). Yet this argument falls on deaf ears, and the counter-claimants have succeeded in reducing vaccination rates among certain communities to the extent that outbreaks of preventable childhood illnesses (such as polio, meningitis, and measles) are occurring.

F. The MMR controversy is a sad case. In 1998, a high-profile paper linked this vaccine to autism. It was later shown that the author was receiving funds from various groups engaged in a lawsuit against vaccine manufacturers, and that the study was both ethically and methodologically faulty. Data had been manipulated, and results misreported. Similar studies found no link whatsoever, and in 2004, the medical journal which hosted the original article formally retracted its conclusion. Yet vaccination rates in the UK. had dropped to 80% in the subsequent years. In late 1999, a measles outbreak occurred in North Dublin (which had vaccination rates as low as 60%), resulting in 100 hospitalisations and three deaths.

G. One of the key arguments of the anti-vaccinationists is that they have the right to choose their medication. These people attack what they see as the impersonal, intrusive, and uncaring edifice of modern medical science. However, the success of immunisation programs depends on a sufficiently high number of the population being immune, which forces the disease to die out through lack of carriers. If there are enough susceptible individuals to provide a chain of disease transmission, safety is compromised for all, and this is why free choice should not be an issue, particularly when the hard evidence presents an overwhelming case. Personally, I would have thought that when children started dying from preventable diseases, the anti-vaccinationists' case would die also.

H. But there are other agendas at play. Anti-vaccinationists can posture as moral crusaders, dismissing those who support immunisation as being in the payment of big pharmaceutical companies, whom they see as dishonest and immoral. Talk show hosts, women's magazines, paid 'experts', lawyers, and media celebrities, all benefit from creating controversy when none existed, while alternative medicine practitioners and snake-oil salesmen all oppose vaccination, believing that their own slew of pills, potions, and unproven expensive treatments do the job better. Against all this, how can rational science prevail?

Reading Passage Three has seven paragraphs, A–H. Choose the correct heading for Paragraphs B–H from the list of headings.

List of Headings

- i.** Easy publicity
- ii.** Increasing outbreaks of disease
- iii.** Some real reasons
- iv.** All or nothing
- v.** Autism on the rise
- vi.** Past successes
- vii.** A sad consequence
- viii.** An unfortunate coincidence
- ix.** A simple explanation
- x.** Some dubious evidence

Example: Answer Paragraph A vii

- 27.** Paragraph B
- 28.** Paragraph C
- 29.** Paragraph D
- 30.** Paragraph E

31. Paragraph F

32. Paragraph G

33. Paragraph H

Choose THREE answers from the list and write the correct letter, A-G, next to the questions. For which THREE reasons, A-G, do anti-vaccinationists oppose vaccinations?

- A. believing they cause problems
- B. wanting to save money
- C. wanting freedom of choice
- D. not believing drug manufacturers
- E. the pain of vaccinations
- F. the influence of creationists
- G. preferring alternative medicine

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

37. Autism is

- A. sometimes caused by vaccinations.
- B. a very subtle neurological disorder.
- C. most likely inherited.
- D. increasing.

38. The 1998 paper was

- A.** the cause of falling vaccination rates.
- B.** defended by the medical journal.
- C.** verified by other studies.
- D.** funded by patients.

39. Vaccinations

- A.** have removed most smallpox from the world.
- B.** are supported by solid evidence.
- C.** are defended on some websites.
- D.** are no longer necessary.

40. Alternative medicine practitioners

- A.** believe vaccinations are generally good.
- B.** can be impersonal and uncaring.
- C.** are often supported by politicians.
- D.** are often quite cheap.

Practice Test 5

Reading Passage 1

Walking with dinosaurs

Peter L. Falkingham and his colleagues at Manchester University are developing techniques which look set to revolutionize our understanding of how dinosaurs and other extinct animals behaved.

The media image of palaeontologists who study prehistoric life is often of field workers camped in the desert in the hot sun, carefully picking away at the rock surrounding a large dinosaur bone. But Peter Falkingham has done little of that for a while now. Instead, he devotes himself to his computer. Not because he has become inundated with paperwork, but because he is a new kind of palaeontologist: a computational palaeontologist.

What few people may consider is that uncovering a skeleton, or discovering a new species, is where the research begins, not where it ends. What we really want to understand is how the extinct animals and plants behaved in their natural habitats. Drs Bill Sellers and Phil Manning from the University of Manchester use a 'genetic algorithm' – a kind of computer code that can change itself and 'evolve' – to explore how extinct animals like dinosaurs, and our own early ancestors, walked and stalked.

The fossilized bones of a complete dinosaur skeleton can tell scientists a lot about the animal, but they do not make up the complete picture and the computer can try to fill the gap. The computer model is given a digitized skeleton, and the locations of known muscles. The model then randomly activates the muscles. This, perhaps unsurprisingly, results almost without fail in the animal falling on its face. So the computer alters the activation pattern and tries again ... usually to similar effect.

The modeled dinosaurs quickly 'evolve'. If there is any improvement, the computer discards the old pattern and adopts the new one as the base for alteration. Eventually, the muscle activation pattern evolves a stable way of moving, the best possible solution is reached, and the dinosaur can walk, run, chase or graze. Assuming natural selection evolves the best possible solution too, the modeled animal should be moving in a manner similar to its now-extinct counterpart. And indeed, using the same method for living animals (humans, emu and ostriches) similar top speeds were achieved on the computer as in reality. By comparing their cyberspace results with real measurements of living species, the Manchester team of palaeontologists can be confident in the results computed showing how extinct prehistoric animals such as dinosaurs moved.

The Manchester University team have used the computer simulations to produce a model of a giant meat-eating dinosaur. It is called an acrocanthosaurus which literally means 'high spined lizard' because of the spines which run along its backbone. It is not really known why they are there but scientists have speculated they could have supported a hump that stored fat and water reserves. There are also those who believe that the spines acted as a support for a sail. Of these, one half think it was used as a display and could be flushed with blood and the other half think it was used as a temperature-regulating device. It may have been a mixture of the two. The skull seems out of proportion with its thick, heavy body because it is so narrow and the jaws are delicate and fine. The feet are also worthy of note as they look surprisingly small in contrast to the animal as a whole. It has a deep broad tail and powerful leg muscles to aid locomotion. It walked on its back legs and its front legs were much shorter with powerful claws.

Falkingham himself is investigating fossilized tracks, or footprints, using computer simulations to help analyze how extinct animals moved. Modern-day trackers who study the habitats of wild animals can tell you what animal made a track, whether that animal was walking or running, sometimes even the sex of the animal. But a fossil track poses a more considerable challenge to interpret in the same way. A crucial consideration is knowing what the environment including the mud, or sediment, upon which the animal walked was like millions of years ago when the track was made. Experiments can answer these questions but the number of variables is staggering. To physically recreate each scenario with a box of mud is extremely time-consuming and difficult to repeat accurately. This is where computer simulation comes in.

Falkingham uses computational techniques to model a volume of mud and control the moisture content, consistency, and other conditions to simulate the mud of prehistoric times. A footprint is then made in the digital mud by a virtual foot. This footprint can be chopped up and viewed from any angle and stress values can be extracted and calculated from inside it. By running hundreds of these simulations simultaneously on supercomputers, Falkingham can start to understand what types of footprint would be expected if an animal moved in a certain way over a given kind of ground. Looking at the variation in the virtual tracks, researchers can make sense of fossil tracks with greater confidence. The application of computational techniques in palaeontology is becoming more prevalent every year. As computer power continues to increase, the range of problems that can be tackled and questions that can be answered will only expand.

Do the following statements agree with the information given in Reading Passage 1? In boxes 1–6 on your answer sheet, write

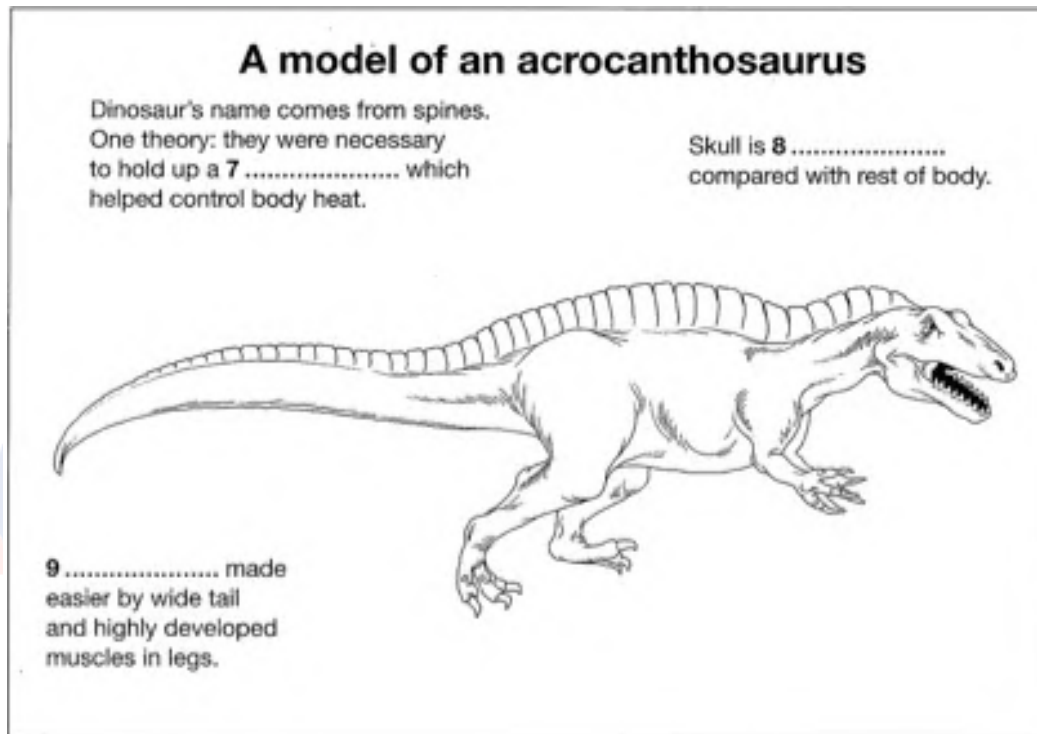
TRUE if the statement agrees with the information

FALSE if the statement contradicts the information

NOT GIVEN If there is no information on this

1. In his study of prehistoric life, Peter Falkingham rarely spends time on outdoor research.
2. Several attempts are usually needed before the computer model of a dinosaur used by Sellers and Manning manages to stay upright.
3. When the Sellers and Manning computer model was used for people, it showed them moving faster than they are physically able to.
4. Some palaeontologists have expressed reservations about the conclusions reached by the Manchester team concerning the movement of dinosaurs.
5. An experienced tracker can analyse fossil footprints as easily as those made by live animals.
6. Research carried out into the composition of prehistoric mud has been found to be inaccurate.

Label the diagram below. Choose **NO MORE THAN ONE WORD** from the passage for each answer. Write your answers in boxes 7–9 on your answer sheet.



Complete the flow-chart below. Write NO MORE THAN TWO WORDS for each answer.

Peter Falkingham's computer model

Mud is simulated with attention to its texture and thickness and how much **10** it contains.



A virtual foot produces a footprint in the mud.



The footprint is dissected and examined from all angles.



Levels of **11** are measured within the footprint.



Multiple simulations relate footprints to different types of **12**



More accurate interpretation of **13** is possible.

Reading Passage 2

The robots are coming

A. Can robots advance so far that they become the ultimate threat to our existence? Some scientists say no, and dismiss the very idea of Artificial Intelligence. The human brain, they argue, is the most complicated system ever created, and any machine designed to reproduce human thought is bound to fail. Physicist Roger Penrose of Oxford University and others believe that machines are physically incapable of human thought. Colin McGinn of Rutgers University backs this up when he says that Artificial Intelligence 'is like sheep trying to do complicated psychoanalysis. They just don't have the conceptual equipment they need in their limited brains'.

B. Artificial Intelligence, or AI, is different from most technologies in that scientists still understand very little about how intelligence works. Physicists have a good understanding of Newtonian mechanics and the quantum theory of atoms and molecules, whereas the basic laws of intelligence remain a mystery.

But a sizable number of mathematicians and computer scientists, who are specialists in the area, are optimistic about the possibilities.

To them it is only a matter of time before a thinking machine walks out of the laboratory. Over the years, various problems have impeded all efforts to create robots. To attack these difficulties, researchers tried to use the 'top-down approach', using a computer in an attempt to program all the essential rules onto a single disc. By inserting this into a machine, it would then become self-aware and attain human-like intelligence.

C. In the 1950s and 1960s great progress was made, but the shortcomings of these prototype robots soon became clear. They were huge and took hours to navigate across a room. Meanwhile, a fruit fly, with a brain containing only a fraction of the computing power, can effortlessly navigate in three dimensions.

Our brains, like the fruit fly's, unconsciously recognize what we see by performing countless calculations. This unconscious awareness of patterns is exactly what computers are missing. The second problem is robots' lack of common sense. Humans know that water is wet and that mothers are older than their daughters. But there is no mathematics that can express these truths. Children learn the intuitive laws of biology and physics by interacting with the real world. Robots know only what has been programmed into them.

D. Because of the limitations of the top-down approach to Artificial Intelligence, attempts have been made to use a 'bottom-up' approach instead – that is, to try to imitate evolution and the way a baby learns. Rodney Brooks was the director of MIT's Artificial Intelligence laboratory, famous for its lumbering 'top-down' walking robots. He changed the course of research when he explored the unorthodox idea of tiny 'insectoid' robots that learned to walk by bumping into things instead of computing mathematically the precise position of their feet. Today many of the descendants of Brooks' insectoid robots are on Mars gathering data for NASA (The National Aeronautics and Space Administration), running across the dusty landscape of the planet. For all their successes in mimicking the behavior of insects, however, robots using neural networks have performed miserably when their programmers have tried to duplicate in them the behavior of higher organisms such as mammals. MIT's Marvin Minsky summarises the problems of AI: 'The history of AI is sort of funny because the first real accomplishments were beautiful things, like a machine that could do well in a maths course. But then we started to try to make machines that could answer questions about simple children's stories. There's no machine today that can do that.'

E. There are people who believe that eventually there will be a combination between the top- down and bottom-up, which may provide the key to Artificial Intelligence. As adults, we blend the two approaches. It has been suggested that our emotions represent the quality that most distinguishes us as human, that it is impossible for machines ever to have emotions. Computer expert Hans Moravec thinks that in the future robots will be programmed with emotions such as fear to protect themselves so that they can signal to humans when their batteries are running low, for example. Emotions are vital in decision-making. People who have suffered a certain kind of brain injury lose the ability to experience emotions and become unable to make decisions. Without emotions to guide them, they debate endlessly over their options. Moravec points out that as robots become more intelligent and are able to make choices, they could likewise become paralysed with indecision. To aid them, robots of the future might need to have emotions hardwired into their brains.

F. There is no universal consensus as to whether machines can be conscious, or even, in human terms, what consciousness means. Minsky suggests the thinking process in our brain is not localised but spread out, with different centres competing with one another at any given time. Consciousness may then be viewed as a sequence of thoughts and images issuing from these different, smaller 'minds', each one competing for our attention. Robots might eventually attain a 'silicon consciousness'. Robots, in fact, might one day embody an architecture for thinking and processing information that is different from ours – but also indistinguishable. If that happens, the question of whether they really 'understand' becomes largely irrelevant. A robot that has perfect mastery of syntax, for all practical purposes, understands what is being said.

Reading Passage 2 has six paragraphs A-F. Which paragraph contains the following information? You may use any letter more than once.

- 14.** An insect that proves the superiority of natural intelligence over Artificial Intelligence
- 15.** Robots being able to benefit from their mistakes
- 16.** Many researchers not being put off believing that Artificial Intelligence will eventually be developed
- 17.** An innovative approach that is having limited success
- 18.** The possibility of creating Artificial Intelligence being doubted by some academics
- 19.** No generally accepted agreement of what our brains do
- 20.** Robots not being able to extend the intelligence in the same way as humans

Look at the following people (Questions 21-23) and the list of statements below. Match each person with the correct statement A-E

- 21.** Colin McGinn
- 22.** Marvin Minsky
- 23.** Hans Moravec

- A. Artificial Intelligence may require something equivalent to feelings in order to succeed.
- B. Different kinds of people use different parts of the brain.
- C. Tests involving fiction have defeated Artificial Intelligence so far.
- D. People have intellectual capacities which do not exist in computers.
- E. People have no reason to be frightened of robots

Complete the summary below. Choose ONE WORD ONLY from the passage for each answer.

When will we have a thinking machine?

Despite some advances, the early robots had certain weaknesses. They were given the information they needed on a (24).....This was known as the 'top-down' approach and enabled them to do certain tasks but they were unable to recognise (25).....Nor did they have any intuition or ability to make decisions based on experience. Rodney Brooks tried a different approach. Robots similar to those invented by Brooks are to be found on (26).....where they are collecting information.

Reading Passage 3

Endangered languages

'Nevermind whales, save the languages', says Peter Monaghan, graduate of the Australian National University

Worried about the loss of rain forests and the ozone At linguistics meetings in the US, where the layer? Well, neither of those is doing any worse than endangered-language issue has of late been a large majority of the 6,000 to 7,000 languages that something of a flavour of the month, there is remain in use on Earth. One half of the survivors will growing evidence that not all approaches to the almost certainly be gone by 2050, while 40% more preservation of languages will be particularly will probably be well on their way out. In their place, helpful. Some linguists are boasting, for example, almost all humans will speak one of a handful of of more and more sophisticated means of capturing mega languages – Mandarin, English, Spanish.

Linguists know what causes languages to disappear, but less often remarked is what happens on the way to disappearance: languages' vocabularies, grammars and expressive potential all diminish as one language is replaced by another. 'Say a community goes over from speaking a traditional Aboriginal language to speaking a creole*,' says Australian Nick Evans, a leading authority on Aboriginal languages, 'you leave behind a language where there's very fine vocabulary for the landscape. All that is gone in a creole. You've just got a few words like 'gum tree' or whatever. As speakers become less able to express the wealth of knowledge that has filled ancestors' lives with meaning over millennia, it's no wonder that communities tend to become demoralised.'

If the losses are so huge, why are relatively few linguists combating the situation? Australian linguists, at least, have achieved a great deal in terms of preserving traditional languages. Australian governments began in the 1970s to support an initiative that has resulted in good documentation of most of the 130 remaining Aboriginal languages. In England, another Australian, Peter Austin, has directed one of the world's most active efforts to limit language loss, at the University of London. Austin heads a programme that has trained many documentary linguists in England as well as in language-loss hotspots such as West Africa and South America.

At linguistics meetings in the US, where the endangered-language issue has of late been something of a flavour of the month, there is growing evidence that not all approaches to the preservation of languages will be particularly helpful. Some linguists are boasting, for example, of more and more sophisticated means of capturing languages: digital recording and storage, and internet and mobile phone technologies. But these are encouraging the 'quick dash' style of recording trip: fly in, switch on digital recorder, fly home, download to hard drive, and store gathered material for future research. That's not quite what some endangered-language specialists have been seeking for more than 30 years. Most loud and untiring has been Michael Krauss, of the University of Alaska. He has often complained that linguists are playing with non-essentials while most of their raw data is disappearing.

Who is to blame? That prominent linguist Noam Chomsky, say Krauss and many others. Or, more precisely, they blame those linguists who have been obsessed with his approaches. Linguists who go out into communities to study, document and describe languages, argue that theoretical linguists, who draw conclusions about how languages work, have had so much influence that linguistics has largely ignored the continuing disappearance of languages.

Chomsky, from his post at the Massachusetts Institute of Technology, has been the great man of theoretical linguistics for far longer than he has been known as a political commentator. His landmark work of 1957 argues that all languages exhibit certain universal grammatical features, encoded in the human mind. American linguists, in particular, have focused largely on theoretical concerns ever since, even while doubts have mounted about Chomsky's universals.

Austin and Co. are in no doubt that because languages are unique, even if they do tend to have common underlying features, creating dictionaries and grammars requires prolonged and dedicated work. This requires that documentary linguists observe not only languages' structural subtleties, but also related social, historical and political factors. Such work calls for persistent funding of field scientists who may sometimes have to venture into harsh and even hazardous places. Once there, they may face difficulties such as community suspicion. As Nick Evans says, a community who speak an endangered language may have reasons to doubt or even oppose efforts to preserve it. They may have seen support and funding for such work come and go. They may have given up using the language with their children, believing they will benefit from speaking a more widely understood one. Plenty of students continue to be drawn to the intellectual thrill of linguistics field work. That's all the more reason to clear away barriers, contend Evans, Austin and others. The highest barrier, they agree, is that the linguistics profession's emphasis on theory gradually wears down the enthusiasm of linguists who work in communities. Chomsky disagrees.

Chomsky has recently begun to speak in support of language preservation. But his linguistic, as opposed to humanitarian, argument is, let's say, unsentimental: the loss of a language, he states, 'is much more of a tragedy for linguists whose interests are mostly theoretical, like me, than for linguists who focus on describing specific languages, since it means the permanent loss of the most relevant data for general theoretical work'. At the moment, few institutions award doctorates for such work, and that's the way it should be, he reasons. In linguistics, as in every other discipline, he believes that good descriptive work requires thorough theoretical understanding and should also contribute to building new theory. But that's precisely what documentation does, objects Evans. The process of immersion in a language, to extract, analyse and sum it up, deserves a PhD because it is 'the most demanding intellectual task a linguist can engage in'.

Do the following statements agree with the views of the writer In Reading Passage 3? In boxes 27–32 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

27. By 2050 only a small number of languages will be flourishing.

28. Australian academics' efforts to record existing Aboriginal languages have been too limited.

29. The use of technology in language research is proving unsatisfactory in some respects.

30. Chomsky's political views have overshadowed his academic work.

31. Documentary linguistics studies require long-term financial support.

32. Chomsky's attitude to disappearing languages is too emotional.

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

33. The writer mentions rainforests and the ozone layer

A. because he believes anxiety about environmental issues is unfounded.

B. to demonstrate that academics in different disciplines share the same problems.

C. because they exemplify what is wrong with the attitudes of some academics.

D. to make the point that the public should be equally concerned about languages.

34. What does Nick Evans say about speakers of a creole?

A. They lose the ability to express ideas which are part of their culture.

B. Older and younger members of the community have difficulty communicating.

C. They express their ideas more clearly and concisely than most people.

D. Accessing practical information causes problems for them.

35. What is similar about West Africa and South America, from the linguist's point of view?

- A.** The English language is widely used by academics and teachers.
- B.** The documentary linguists who work there were trained by Australians.
- C.** Local languages are disappearing rapidly in both places.
- D.** There are now only a few undocumented languages there.

36. Michael Krauss has frequently pointed out that

- A.** linguists are failing to record languages before they die out.
- B.** linguists have made poor use of improvements in technology.
- C.** linguistics has declined in popularity as an academic subject.
- D.** linguistics departments are underfunded in most universities.

Complete each sentence with the correct ending A-G below. Write the correct letter A-G in boxes 37-40 on your answer sheet.

37. Linguists like Peter Austin believe that every language is unique

38. Nick Evans suggests a community may resist attempts to save its language

39. Many young researchers are interested in doing practical research

40. Chomsky supports work in descriptive linguistics

- A.** even though it is in danger of disappearing.
- B.** provided that it has a strong basis in theory.
- C.** although it may share certain universal characteristics
- D.** because there is a practical advantage to it
- E.** so long as the drawbacks are clearly understood.
- F.** in spite of the prevalence of theoretical linguistics.
- G.** until they realize what is involved

Student Space:



Practice Test 6

Reading Passage 1

Whale Culture

A. Most social scientists stubbornly resist the idea that animals have culture. Even such advanced cetacean mammals as whales and dolphins clearly don't have art, literature or architecture. But patient observation over many years has begun to reveal behaviors that can only have been learned from other whales. And that, say whale biologists, constitutes culture.

B. So far, humpback and killer whales provide the best evidence of culture in cetaceans, and the song of the male humpback is among the most striking examples. Humpback populations in different oceans sing different songs, but within the same ocean, they all stick to the same one. However, during the breeding season, the sounds change, as it appears that females are drawn to novel songs. One male might add an extra set of groans; another might drop a series of grunts. Soon all the other males have altered their own rendition to incorporate the changes until they are once again singing the same song. Since this occurs among thousands of whales spread across a vast part of the planet, the change cannot be in response to any factor in the animals' environment. The latest version of the song can be learned only from other whales – almost certainly by imitation.

C. Culture plays an even bigger part in the life of killer whales. Nowhere is this more obvious than along the northwest coast of America, where killer whales are split into two distinct populations – ‘residents’ and ‘transients’. They live in the same stretch of water, but they don’t mingle. In effect, they belong to two quite separate cultures. Residents live in stable groups, or ‘pods’, made up of two or three mothers and their offspring – perhaps 20 whales in all. Calves stay with their mothers throughout adulthood, and in many years of observation, no one has ever seen a whale switch pods. Transients travel in smaller, more changeable groups of between three and six.

D. One of the most obvious distinctions between the transient and resident societies is the way they impart information. Killer whales detect prey with a range of echolocating clicks but converse with a vocabulary of squeaks, whistles, and whines. Transients have only a few such calls, and all transient societies share the same ones. Residents have a much more extensive repertoire, and each family group has its own unique and distinctive set of calls. Despite regular interaction between them, each resident pod sticks firmly to its own dialect. Research shows these dialects are maintained for at least 40 years.

E. To qualify as part of killer whale culture, dialects must be learned from other members of the pod. Animals with different dialects share the same glasses of water, so the variations can’t be a product of the physical environment. “And we can throw out the notion that the dialects are inherited,” says Lance Barrett-Lennard of the University of British Columbia. He has spent the past seven years analyzing DNA from 270 whales. His paternity tests reveal that female killer whales invariably attract mates from outside their own pod – males with very different dialects. If dialects were programmed by genetics, call patterns from both father and mother would be passed on the call. “A calf uses the calls of its maternal pod very precisely. There’s no input from the father,” says Barrett-Lennard.

F. The question still remains – is this culture? It is, according to Frans de Waal of Emory University in Atlanta, who argues that culture is just another biological adaptation that has evolved in many creatures. One benefit of viewing culture in this way is that you can start to understand how and why it might have arisen in these creatures. Whales have several biological attributes that give them an advantage in social learning. Apart from their advanced mental abilities, they are adept at recognizing sounds: which is ideal for communication in the marine environment. Many species spend years rearing their offspring and live in small, stable, multi-generational societies, a social system that provides ample opportunity for teaching and learning.

G. But why have cetaceans evolved the ability to learn from other group members? Experts in whale biology believe that environmental factors and the need to adapt to sudden changes in the environment played a large part in the emergence of culture. Although the ocean is a relatively stable habitat in many ways, it is highly changeable in one crucial respect – the availability of food. One moment there might be a plentiful supply of fish, the next they've disappeared. When that happens, the past experience of the senior members of the group – and the ability to share this knowledge – is a huge asset. The dialects of killer whales allow members of the groups to identify each other, enabling them to share information about food hot spots. Among resident killer whales, it also allows females to avoid inbreeding by picking out a mate with a strange dialect from outside their pods, says Barrett-Lennard.

H. The importance of sharing information seems to have led to biological changes in at least some species of whale. Female killer whales, like humans, are very unusual in that they live up to a quarter of a century after their last offspring. This only makes sense if they have something useful to give their descendants. And what whale matriarchs offer is the most important thing of all – cultural knowledge, vital for the group's survival, passed directly from one generation to the next.

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

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. Resident killer whales appear to remain with their maternal group for life
2. Resident killer whales have a more restricted range of calls than transients.
3. There is a vocabulary of sounds that is common to all transient killer whales
4. Resident killer whales share the dialects of other resident communities living in the same waters.

Complete the summary below.

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

Write your answers in boxes 6–8 on your answer sheet.

It has been observed that resident killer whales invariably live in fixed family groups, known as 6. _____. Each of these has its own unique set of calls, despite close contact with other family groups. As the same areas of ocean contain many different groups with widely varying dialects, it is clear that these differences could not have emerged as a result of the whales' 7. _____. According to tests conducted by Lance Barrett-Lennard, a calf communicates exclusively with the dialect of the group to which it's 8. _____ belongs. Barrett-Lennard also rejects the idea that call patterns are inherited.

Choose THREE letters.

A–F Write the correct letters in boxes 9–11 on your answer sheet

Which THREE of the following features of whales are mentioned in the passage?

- A. intelligence
- B. physical strength
- C. sensitivity to sound.
- D. prolonged life span
- E. lengthy period of fertility
- F. adaptability to a variety of foods

**Reading Passage 3 has eight paragraphs,
A-H Which paragraph contains the following information?
Write the correct letter A-H in boxes 38-40 on your answer sheet.**

- 12.** an example of the kind of information passed by whales to each other
- 13.** a reference to variations in communication styles between different cultures within one species
- 14.** ways in which the skills of whales are favorable for the development of culture

Student Space:



Reading Passage 2

Instructions to follow

You should spend 20 minutes on Questions 15–27 which are based on Reading Passage 2.

Coral Reefs

A. Coral reefs are underwater structures made from calcium carbonate secreted by corals. Coral reefs are colonies of tiny living animals found in marine waters that contain few nutrients. Most coral reefs are built from stony corals, which in turn consist of polyps that cluster in groups. Coral reefs are estimated to cover 284,300 km² just under 0.1% of the oceans' surface area, about half the area of France. The Indo-Pacific region accounts for 91.9% of this total area. Southeast Asia accounts for 32.3% of that figure, while the Pacific including Australia accounts for 40.8%. Atlantic and Caribbean coral reefs account for 7.6%. Yet often called —rainforests of the sea, coral reefs form some of the most diverse ecosystems on Earth. They provide a home for 25% of all marine species, including fish, mollusks, worms, crustaceans, echinoderms, sponges, tunicates, and other cnidarians. Paradoxically, coral reefs flourish even though they are surrounded by ocean waters that provide few nutrients. They are most commonly found at shallow depths in tropical waters, but deep-water and cold-water corals also exist on smaller scales in other areas. Although corals exist both in temperate and tropical waters, shallow-water reefs form only in a zone extending from 30°N to 30°S of the equator. Deepwater coral can exist at greater depths and colder temperatures at much higher latitudes, as far north as Norway.

Coral reefs are rare along the American and African west coasts. This is due primarily to upwelling and strong cold coastal currents that reduce water temperatures in these areas (respectively the Peru, Benguela, and Canary streams). Corals are seldom found along the coastline of South Asia from the eastern tip of India (Madras) to the Bangladesh and Myanmar borders. They are also rare along the coast around northeastern South America and Bangladesh due to the freshwater released from the Amazon and Ganges Rivers, respectively.

B. Coral reefs deliver ecosystem services to tourism, fisheries, and coastline protection. The global economic value of coral reefs has been estimated at as much as \$US375 billion per year. Coral reefs protect shorelines by absorbing wave energy, and many small islands would not exist without their reef to protect them.

C. The value of reefs in biodiverse regions can be even higher. In parts of Indonesia and the Caribbean where tourism is the main use, reefs are estimated to be worth US\$1 million per square kilometer, based on the cost of maintaining sandy beaches and the value of attracting snorkelers and scuba divers. Meanwhile, a recent study of the Great Barrier Reef in Australia found that the reef is worth more to the country as an intact ecosystem than as an extractive reserve for fishing. Each year more than 1.8 million tourists visit the reef, spending an estimated AU\$4.3 billion (Australian dollars) on reef-related industries from diving to boat rental to posh island resort stays. In the Caribbean, says UNEP, the net annual benefits from diver tourism were US\$2 billion in 2000 with US\$625 million spent directly on diving on reefs. Further, reef tourism is an important source of employment, especially for some of the world's poorest people. UNEP says that of the estimated 30 million small-scale fishers in the developing world, most are dependent to a greater or lesser extent on coral reefs.

In the Philippines, for example, more than one million small-scale fishers depend directly on coral reefs for their livelihoods. The report estimates that reef fisheries were worth between \$15,000 and \$150,000 per square kilometer a year, while fish caught for aquariums were worth \$500 a kilogram against \$6 for fish caught as food. The aquarium fish export industry supports around 50,000 people and generates some US\$5.5 million a year in Sri Lanka alone.

D. Unfortunately, coral reefs are dying around the world. In particular, coral mining, agricultural and urban runoff, pollution (organic and inorganic), disease, and the digging of canals and access into islands and bays are localized threats to coral ecosystems. Broader threats are sea temperature rise, sea-level rise, and pH changes from ocean acidification, all associated with greenhouse gas emissions. Some current fishing practices are destructive and unsustainable. These include cyanide fishing, overfishing, and blast fishing. Although cyanide fishing supplies live reef fish for the tropical aquarium market, most fish caught using this method are sold in restaurants, primarily in Asia, where live fish are prized for their freshness.

To catch fish with cyanide, fishers dive down to the reef and squirt cyanide into coral crevices and on the fast-moving fish, to stun the fish making them easy to catch. Overfishing is another leading cause of coral reef degradation. Often, too many fish are taken from one reef to sustain a population in that area. Poor fishing practices, such as banging on the reef with sticks (Muro-ami), destroy coral formations that normally function as fish habitats. In some instances, people fish with explosives (blast fishing), which blast apart the surrounding coral.

E. Tourist resorts that empty their sewage directly into the water surrounding coral reefs contribute to coral reef degradation. Wastes kept in poorly maintained septic tanks can also leak into surrounding groundwater, eventually seeping out to the reefs. Careless boating, diving, snorkeling, and fishing can also damage coral reefs. Whenever people grab, kick, walk on, or stir up sediment in the reefs, they contribute to coral reef destruction. Corals are also harmed or killed when people drop anchors on them or when people collect coral.

F. To find answers to these problems, scientists and researchers study the various factors that impact reefs. The list includes the ocean's role as a carbon dioxide sink, atmospheric changes, ultraviolet light, ocean acidification, viruses, impacts of dust storms carrying agents to far-flung reefs, pollutants, algal blooms, and others. Reefs are threatened well beyond coastal areas. General estimates show approximately 10% of the world's coral reefs are dead. About 60% of the world's reefs are at risk due to destructive, human-related activities. The threat to the health of reefs is particularly strong in Southeast Asia, where 80% of reefs are endangered.

G. In Australia, the Great Barrier Reef is protected by the Great Barrier Reef Marine Park Authority and is the subject of much legislation, including a biodiversity action plan. Inhabitants of Ahus Island, Manus Province, Papua New Guinea, have followed a generations-old practice of restricting fishing in six areas of their reef lagoon. Their cultural traditions allow line fishing, but not net or spearfishing. The result is both the biomass and individual fish sizes are significantly larger in these areas than in places where fishing is unrestricted.

The reading Passage has seven paragraphs A–G.

Which paragraph contains the following information?

Write the correct letter A–G, in boxes 15–20 on your answer sheet.

You may use any letter more than once.

- 15.** Geographical Location of the world's coral reef
- 16.** How does coral reef benefit the economy locally
- 17.** The statistics of coral reef's economic significance
- 18.** The listed reasons for the declining number of coral reef
- 19.** Physical approach to the coral reef by people
- 20.** Unsustainable fishing methods are applied in regions of the world

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

Write your answers in boxes 21–26 on your answer sheet.

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

- 21.** Coral reefs provide a habitat to a variety of marine life.
- 22.** Coral reef distributes around the ocean disproportionately.
- 23.** Coral reef is increasingly important for scientific purpose.
- 24.** Coral reefs are greatly exchanged among and exported to other counties.
- 25.** Reef tourism is of economic essence generally for some poor people.
- 26.** As with other fishing businesses, the coral fishery is not suitable for women and children.

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

Write your answers in box 27 on your answer sheet.

27. What is the main purpose of this passage?

- A.** Demonstrate how coral reef growth in the ocean
- B.** To tell that coral reef is widely used as a scientific project
- C.** Present the general benefits and an alarming situation of coral reef
- D.** To show the vital efforts made to protect the coral reef in Australia

Student Space:



Reading Passage 3

Instructions to follow

You should spend 20 minutes on Questions 28–39 which are based on Reading Passage 3.

Traditional Farming System in Africa

A. By tradition land in Luapula is not owned by individuals, but as in many other parts of Africa is allocated by the headman or headwoman of a village to people of either sex, according to need. Since land is generally prepared by hand, one ulupwa cannot take on a very large area; in this sense, land has not been a limiting resource over large parts of the province. The situation has already changed near the main townships, and there has long been a scarcity of land for cultivation in the Valley. In these areas registered ownership patterns are becoming prevalent.

B. Most of the traditional cropping in Luapula, as in the Bemba area to the east, is based on citemene, a system whereby crops are grown on the ashes of tree branches. As a rule, entire trees are not felled but are pollarded so that they can regenerate. Branches are cut over an area of varying size early in the dry season and stacked to dry over a rough circle about a fifth to a tenth of the pollarded area. The wood is fired before the rains and in the first year planted with the African cereal finger millet (*Eleusine coracana*).

C. During the second season, and possibly for a few seasons more the area is planted to variously mixed combinations of annuals such as maize, pumpkins (*Telfiria occidentalis*), and other cucurbits, sweet potatoes, groundnuts, *Phaseolus* beans, and various leafy vegetables, grown with a certain amount of rotation. The diverse sequence ends with the vegetable cassava, which is often planted into the developing last-but-one crop as a relay.

D. Richards (1969) observed that the practice of citemene entails a definite division of labor between men and women. A man stakes out a plot in an unobtrusive manner since it is considered provocative towards one's neighbors to mark boundaries in an explicit way. The dangerous work of felling branches is the men's province and involves much pride. Branches are stacked by the women and fired by the men. Formerly women and men cooperated in the planting work, but the harvesting was always done by the women. At the beginning of the cycle little weeding is necessary, since the firing of the branches effectively destroys weeds.

As the cycle progresses weeds increase and nutrients eventually become depleted to a point where further effort with annual crops is judged to be not worthwhile: at this point, the cassava is planted since it can produce a crop on nearly exhausted soil. Thereafter the plot is abandoned, and a new area is pollarded for the next citemene cycle.

E. When the forest is not available – this is increasingly the case nowadays – various ridging systems (ibala) are built on small areas, to be planted with combinations of maize, beans, groundnuts, and sweet potatoes, usually relayed with cassava. These plots are usually tended by women, and provide subsistence. Where their roots have year-round access to water tables mango, guava and oil-palm trees often grow around houses, forming a traditional agroforestry system. In season some of the fruit is sold by the roadside or in local markets.

F. The margins of dambos are sometimes planted with local varieties of rice during the rainy season, and areas adjacent to vegetables are irrigated with water from the dambo during the dry season. The extent of cultivation is very limited, no doubt because the growing of crops under dambo conditions calls for a great deal of skill. Near towns, some of the vegetable produce is sold in local markets.

G. Fishing has long provided a much-needed protein supplement to the diet of Luapulans, as well as being the one substantial source of cash. Much fish has dried for sale to areas away from the main waterways. The Mweru and Bangweulu Lake Basins are the main areas of year-round fishing, but the Luapula River is also exploited during the latter part of the dry season. Several previously abundant and desirable species, such as the Luapula salmon or mpumbu (*Labeo altivelis*) and pale (*Sarotherodon machochir*) have all but disappeared from Lake Mweru, apparently due to mismanagement.

H. Fishing has always been a far more remunerative activity in Luapula than crop husbandry. A fisherman may earn more in a week than a bean or maize grower in a whole season. I sometimes heard claims that the relatively high earnings to be obtained from fishing induced an 'easy come, easy go' outlook among Luapulan men. On the other hand, someone who secures good but erratic earnings may feel that their investment in economically productive activity is not worthwhile because Luapulans fail to cooperate well in such activities. Besides, a fisherman with spare cash will find little in the way of working equipment to spend his money on. Better spend one's money in the bars and have a good time!

I. Only small numbers of cattle or oxen are kept in the province owing to the prevalence of the tsetse fly. For the few herds, the dambos provide subsistence grazing during the dry season. The absence of animal draft power greatly limits peoples' ability to plow and cultivate land: a married couple can rarely manage to prepare by hand-hoeing. Most people keep freely roaming chickens and goats. These act as a reserve for bartering, but may also be occasionally slaughtered for ceremonies or for entertaining important visitors. These animals are not a regular part of most peoples' diet.

J. Citemene has been an ingenious system for providing people with seasonal production of high-quality cereals and vegetables in regions of acid, heavily leached soils. Nutritionally, the most serious deficiency was that of protein. This could at times be alleviated when fish was available, provided that cultivators lived near the Valley and could find the means of bartering for dried fish. The citemene/fishing system was well adapted to the ecology of the miombo regions and sustainable for long periods, but only as long as human population densities stayed at low levels.

Although population densities are still much lower than in several countries of South. In East Asia, neither the fisheries nor the forests and woodlands of Luapula are capable, with unmodified traditional practices, of supporting the people in a sustainable manner. Overall, people must learn to intensify and diversify their productive systems while yet ensuring that these systems will remain productive in the future when even more people will need food. Increasing the overall production of food, though a vast challenge in itself, will not be enough, however. At the same time, storage and distribution systems must allow everyone access to at least a moderate share of the total.

Complete the sentences below with words taken from Reading Passage.

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

Write your answers in boxes 28–31 on your answer sheet.

28. In Luapula land allocation is in accordance with _____.
29. The citemene system provides the land with _____ where crops are planted.
30. During the second season, the last planted crop is _____.
31. Under suitable conditions, fruit trees are planted near _____.

Classify the following items with the correct description.

Write your answers in boxes 32–35 on your answer sheet

- A. fish
- B. oxen
- C. goats

- 32. be used in some unusual occasions, such as celebrations.
- 33. cannot thrive off being affected by pests.
- 34. be the largest part of creating profit.
- 35. be sold beyond the local area.

Do the following statements agree with the information given in Reading Passage 3? In boxes 36–39 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 passage 3

- 36. People rarely use animals to cultivate the land.
- 37. When it is a busy time, children usually took part in the labor force.
- 38. The local residents eat goats at a regular time.
- 39. Though citemene has been a sophisticated system, it could not provide enough protein.

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

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

40. What is the writer's opinion about the traditional ways of practice?

- A.** They can supply the nutrition that people need.
- B.** They are not capable of providing adequate support to the population,
- C.** They are productive systems that need no more improvement.
- D.** They will be easily modified in the future.

Practice Test 7

Reading Passage 1

Instructions to follow

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

The History of The Tortoise

A. If you go back far enough, everything lived in the sea. At various points in evolutionary history, enterprising individuals within many different animal groups moved out onto the land, sometimes even to the most parched deserts, taking their own private seawater with them in blood and cellular fluids. In addition to the reptiles, birds, mammals, and insects which we see all around us, other groups that have succeeded out of water include scorpions, snails, crustaceans such as woodlice and land crabs, millipedes and centipedes, spiders, and various worms. And we mustn't forget the plants, without whose prior invasion of the land, none of the other migrations could have happened.

B. Moving from water to land involved a major redesign of every aspect of life, including breathing and reproduction. Nevertheless, a good number of thoroughgoing land animals later turned around, abandoned their hard-earned terrestrial re-tooling, and returned to the Water. Seals have only gone part way back. They show us what the intermediates might have been like, on the way to extreme cases such as whales and dugongs.

Whales (including the small whales we call dolphins) and dugongs, with their close cousins the manatees, ceased to be land creatures altogether and reverted to the full marine habits of their remote ancestors. They don't even come ashore to breed. They do, however, still breathe air, having never developed anything equivalent to the gills of their earlier marine incarnation. Turtles went back to the sea a very long time ago and, like all vertebrate returnees to the water, they breathe air. However, they are, in one respect, less fully given back to the water than whales or dugongs, for turtles still lay their eggs on beaches.

C. There is evidence that all modern turtles are descended from a terrestrial ancestor which lived before most of the dinosaurs. There are two key fossils called *Proganochelys quenstedti* and *Palaeochersis talampayensis* dating from early dinosaur times, which appear to be close to the ancestry of all modern turtles and tortoises. You might wonder how we can tell whether fossil animals lived on land or in water, especially if only fragments are found. Sometimes it's obvious. Ichthyosaurs were reptilian contemporaries of the dinosaurs, with fins and streamlined bodies. The fossils look like dolphins and they surely lived like dolphins, in the water. With turtles, it is a little less obvious. One way to tell is by measuring the bones of their forelimbs.

D. Walter Joyce and Jacques Gauthier, at Yale University, obtained three measurements in these particular bones of 71 species of living turtles and tortoises. They used a kind of triangular graph paper to plot the three measurements against one another. All the land tortoise species formed a tight cluster of points in the upper part of the triangle; all the water turtles clustered in the lower part of the triangular graph. There was no overlap, except when they added some species that spend time both in water and on land. Sure enough, these amphibious species show up on the triangular graph approximately halfway between the 'wet cluster' of sea turtles and the 'dry cluster' of land tortoises.

'The next step was to determine where the fossil fell. The bones of *P. quenstedti* and *P. talampayensis* leave us in no doubt. Their points on the graph are right in the thick of the dry cluster. Both these fossils were dry-land tortoises. They come from the era before our turtles returned to the water.

E. You might think, therefore, that modern land tortoises have probably stayed on land ever since those early terrestrial times, as most mammals did after a few of them went back to the sea. But apparently not. If you draw out the family tree of all modern turtles and tortoises, nearly all the branches are aquatic. Today's land tortoises constitute a single branch, deeply nested among branches consisting of aquatic turtles. This suggests that modern land tortoises have not stayed on the land continuously since the time of *P. quenstedti* and *P. talampayensis*. Rather, their ancestors were among those who went back to the water, and they then re-emerged back onto the land in (relatively) more recent times.

F. Tortoises, therefore, represent a remarkable double return. In common with all mammals, reptiles, and birds, their remote ancestors were marine fish and before that various more or less worm-like creatures stretching back, still in the sea, to the primeval bacteria. Later ancestors lived on land and stayed there for a very large number of generations. Later ancestors still evolved back into the water and became sea turtles. And finally, they returned yet again to the land as tortoises, some of which now live in the driest of deserts.

Choose NO MORE THAN TWO WORDS from the passage for each answer. Write your answers in boxes 1–4 on your answer sheet. Answer the questions below

1. What had to transfer from sea to land before any animals could migrate?
2. Which TWO processes are mentioned as those in which animals had to make big changes as they moved onto land?
3. Which physical feature? possessed by their ancestors, do whales lack?
4. Which animals might ichthyosaurs have resembled?

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

In boxes 5–7 on your answer sheet, write

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

5. Turtles were among the first group of animals to migrate back to the sea.
6. It is always difficult to determine where an animal lived when its fossilized remains are incomplete.
7. The habitat of ichthyosaurs can be determined by the appearance of their fossilized remains.

Complete the flow-chart below

Choose NO MORE THAN TWO WORDS AND/OR A NUMBER from the passage for each answer.

Write your answers in boxes 8-13 on your answer sheet.

Method of determining where the ancestors of turtles and tortoises come from:

Step 1: 71 species of living turtles and tortoises were examined and a total of **8** _____ were taken from the bones of their forelimbs.

Step 2: The data was recorded on a **9** _____ (necessary for comparing the information). Outcome: Land tortoises were represented by a dense **10** _____ of points towards the top. Sea turtles were grouped together in the bottom part.

Step 3: The same data was collected from some living **11** _____ species and added to the other results. Outcome: The points for these species turned out to be positioned about **12** _____ up the triangle between the land tortoises and the sea turtles.

Step 4: Bones of *R quenstedti* and *P tampanensis* were examined in a similar way and the results added. Outcome: The position of the points indicated that both these ancient creatures were **13** _____

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

Write the correct letter in box 14 on your answer sheet.

14. According to the writer, the most significant thing about tortoises is that

- A.** they are able to adapt to life in extremely dry environments.
- B.** their original life form was a kind of primeval bacteria,
- C.** they have so much in common with sea turtles.
- D.** they have made the transition from sea to land more than once.

Student Space:



Reading Passage 2

Instructions to follow

You should spend 20 minutes on Questions 15–27 which are based on Reading Passage 2.

The History of Guitar

A. The word 'guitar' was brought into English as an adaptation of the Spanish word 'Guitarra', which was, in turn, derived from the Greek 'kithara'. Tracing the roots of the word further back into linguistic history, it seems to have been a combination of the Indo-European stem 'guit-', meaning music, and the root '-tar', meaning chord or string. The root '-tar' is actually common to a number of languages, and can also be found in the word 'sitar', also a stringed musical instrument. Although the spelling and pronunciation differ between languages, these key elements have been present in most words for 'guitar' throughout history.

B. While the guitar may have gained most of its popularity as a musical instrument during the modern era, guitar-like instruments have been in existence in numerous cultures throughout the world for more than 5,000 years. The earliest instruments that the modern eye and ear would recognize as 'normal' acoustic guitar date from about 500 years ago. Prior to this time, stringed instruments were in use throughout the world, but these early instruments are known primarily from visual depictions, not from the continued existence of music written for them. The majority of these depictions show simple stringed instruments, often lacking some of the parts that define a modern guitar. A number of these instruments have more in common with the lute than the guitar.

C. There is some uncertainty about the exact date of the earliest six-string guitar. The oldest one still in existence, which was made by Gaetano Vinaccia, is dated 1779. However, the authenticity of six-string guitars alleged to have been made prior to 1790 is often suspect, as many fakes have been discovered dating to this era. The early nineteenth century is generally accepted as the time period during which six-string guitars began taking on their modern shape and dimensions. Thus for nearly two hundred years, luthiers, or guitar makers, have been producing versions of the modern acoustic guitar.

D. The first electric guitar was not developed until the early twentieth century. George Beauchamp received the first patent for an electric guitar in 1936, and Beauchamp went on to co-found Rickenbacker, originally known as the Electro String Instrument Company. Although Rickenbacker began producing electric guitars in the late 1930s, this brand received most of its fame in the 1960s, when John Lennon used a Rickenbacker guitar for the Beatles' debut performance on the Ed Sullivan show in 1964. George Harrison later bought a Rickenbacker guitar of his own, and the company later gave him one of their earliest 12-string electric guitars. Paul McCartney also used a Rickenbacker bass guitar for recording. The Beatles continued to use Rickenbacker guitars throughout their career and made the instruments highly popular among other musicians of the era.

E. The Fender Musical Instruments Company and the Gibson Guitar Corporation were two other early electric guitar pioneers, both developing models in the early 1950s. Fender began with the Telecaster in 1950 and 1951, and the Fender Stratocaster debuted in 1954. Gibson began selling the Gibson Les Paul, based partially on assistance from jazz musician and guitar innovator Les Paul, in 1952. The majority of present-day solid-body electric guitars are still based largely on these three early electric guitar designs.

F. Throughout the history of the guitar, an enormous number of individuals have made their mark on the way in which the instrument was built, played, and perceived. Though some of these individuals are particularly well known, like the Beatles or Les Paul, the majority of these people are virtually invisible to most modern guitar fans. By looking at the entire history of the guitar, rather than just recent developments, largely confined to electric guitars, it is possible to see more of the contributions of earlier generations.

Choose NO MORE THAN THREE WORDS from the Reading Passage for each answer for questions 15–21.

15. Despite differences in _____, 'guit-' and '

16. Instruments that we would call acoustic guitars have been made and played for approximately _____

17. No one knows the _____ when the first six-string guitar was made.

18. The _____ of acoustic guitars have not changed much in 200 years.

19. A _____ for an electric guitar was issued in the mid-1930s.

20. Les Paul, the well-known _____ guitarist, was involved in the development of the electric guitar.

21. Most _____ of the guitar know little about its rich history.

Complete the summary.

Choose NO MORE THAN TWO WORDS from the passage for each answer of questions 22–27.

Instruments similar to the guitar have been played by musicians for over **22** _____ years. What we know about many of these instruments comes from **23** _____ rather than actual physical examples or music played on them. In some ways, these early stringed instruments were closer to **24** _____ than the guitar as we know it today. We do have examples of six-string guitars that are 200 years old. However, the **25** _____ of six - string guitars made by guitar makers (who are also known as **26** _____) before the final decade of the eighteenth century is often open to question.

Although the electric guitar was invented in the 1930s, it took several decades for electric guitars to develop, with the company Rickenbacker playing a major part in this development. Most **27** _____ electric guitars in use today are similar in design to guitars produced by the Fender Musical Instruments Company and the Gibson Guitar Corporation in the 1950s.

Reading Passage 3

Instructions to follow

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

Talc Powder

A. Peter Brigg discovers how talc from Luzenac's Trimouns in France finds its way into food and agricultural products – from chewing gum to olive oil. High in the French Pyrenees, some 1,700m above sea level, lies Trimouns, a huge deposit of hydrated magnesium silicate – talc to you and me. Talc from Trimouns, and from ten other Luzenac mines across the globe, is used in the manufacture of a vast array of everyday products extending from paper, paint and plaster to cosmetics, plastics and car tyres. And of course, there is always talc's best-known end use: talcum powder for babies' bottoms. But the true versatility of this remarkable mineral is nowhere better displayed than in its sometimes surprising use in certain niche markets in the food and agriculture industries.

B. Take, for example, the chewing gum business. Every year, Talc de Luzenac France – which owns and operates the Trimouns mine and is a member of international Luzenac Group (the art of Rio Tinto minerals) – supplies about 6,000 tones of talc to chewing gum manufacturers in Europe. "We've been selling to this sector of the market since the 1960s," says Laurent Fournier, a sales manager in Luzenac's Specialties business unit in Toulouse.

“Admittedly, in terms of our total annual sales of talc, the amount we supply to chewing gum manufacturers is relatively small, but we see it as a valuable niche market: one where customers place a premium on securing suppliers from a reliable, high-quality source. Because of this, long term allegiance to a proven supplier is very much a feature of this sector of the talc market.” Switching sources – in the way that you might choose to buy, say, paperclips from Supplier A rather than from Supplier B – is not an easy option for chewing gum manufacturers,” Fournier says. “The cost of reformulating is high, so when customers are using a talc grade that works, even if it’s expensive, they are understandably reluctant to switch.”

C. But how is talc actually used in the manufacture of chewing gum? Patrick Delord, an engineer with a degree in agronomics, who has been with Luzenac for 22 years and is now senior market development manager, Agriculture and Food, in Europe, explains that chewing gums has four main components. “The most important of them is the gum base,” he says. “It’s the gum base that puts the chew into chewing gum. It binds all the ingredients together, creating a soft, smooth texture. To this the manufacturer adds sweeteners, softeners and flavourings. Our talc is used as a filler in the gum base. The amount varies between, say, ten and 35 per cent, depending on the type of gum. Fruit flavoured chewing gum, for example, is slightly acidic and would react with the calcium carbonate that the manufacturer might otherwise use as a filler. Talc, on the other hand, makes an ideal filler because it’s non-reactive chemically. In the factory, talc is also used to dust the gum base pellets and to stop the chewing gum sticking during the lamination and packing process,” Delord adds.

D. The chewing gum business is, however, just one example of talc's use in the food sector. For the past 20 years or so, olive oil processors in Spain have been taking advantage of talc's unique characteristics to help them boost the amount of oil they extract from crushed olives. According to Patrick Delord, talc is especially useful for treating what he calls "difficult" olives. After the olives are harvested – preferably early in the morning because their taste is better if they are gathered in the cool of the day – they are taken to the processing plant. There they are crushed and then stirred for 30–45 minutes. In the old days, the resulting paste was passed through an olive press but nowadays it's more common to add water and centrifuge the mixture to separate the water and oil from the solid matter. The oil and water are then allowed to settle so that the olive oil layer can be decanted off and bottle. "Difficult" olives are those that are more reluctant than the norm to yield up their full oil content. This may be attributable to the particular species of olive, or to its water content and the time of year the olives are collected – at the beginning and the end of the season their water content is often either too high or too low. These olives are easy to recognize because they produce a lot of extra foam during the stirring process, a consequence of an excess of a fine solid that acts as a natural emulsifier. The oil in this emulsion is lost when the water is disposed of. Not only that, if the wastewater is disposed of directly into local fields – often the case in many smaller processing operations – the emulsified oil may take some time to biodegrade and so be harmful to the environment.

E. "If you add between a half and two per cent of talc by weight during the stirring process, it absorbs the natural emulsifier in the olives and so boosts the amount of oil you can extract," says Delord. "In addition, talc's flat, 'platey' structure helps increase the size of the oil droplets liberated during stirring, which again improves the yield. However, because talc is chemically inert, it doesn't affect the colour, taste, appearance or composition of the resulting olive oil."

F. If the use of talc in olive oil processing and in chewing gum is long-established, new applications in the food and agriculture industries are also constantly being sought by Luzenac. One such promising new market is fruit crop protection, being pioneered in the US. Just like people, fruit can get sunburned. In fact, in very sunny regions up to 45 per cent of a typical crop can be affected by heat stress and sunburn. However, in the case of fruit, it's not so much the ultraviolet rays which harm the crop as the high surface temperature that the sun's rays create.

G. To combat this, farmers normally use either chemicals or spray a continuous fine canopy of mist above the fruit trees or bushes. The trouble is, this uses a lot of water – normally a precious commodity in hot, sunny areas – and it is therefore expensive. What's more, the ground can quickly become waterlogged. "So our idea was to coat the fruit with talc to protect it from the sun," says Greg Hunter, a marketing specialist who has been with Luzenac for ten years. "But to do this, several technical challenges had first to be overcome. Talc is very hydrophobic: it doesn't like water. So in order to have a viable product we needed a wettable powder – something that would go readily into suspension so that it could be sprayed onto the fruit. It also had to break the surface tension of the cutin (the natural waxy, waterproof layer on the fruit) and of course, it had to wash off easily when the fruit was harvested. No-one's going to want an apple that's covered in talc."

H. Initial trials in the state of Washington in 2003 showed that when the product was sprayed onto Granny Smith apples, it reduced their surface temperature and lowered the incidence of sunburn by up to 60 per cent. Today the new product, known as Envelop Maximum SPF, is in its second commercial year on the US market. Apple growers are the primary target although Hunter believes grape growers represent another sector with long term potential. He is also hopeful of extending sales to overseas markets such as Australia, South America and southern Europe.

Use the information in the passage to match each use of talc powder with current application from A, B or C. Write the appropriate letters A-C in boxes 28-33 on your answer sheet. You may use any letter more than once.

- A. Fruit protection
- B. Chewing gum business
- C. Olive oil extraction

- 28. Talc is used to increase the size of drops.
- 29. Talc is applied to reduce foaming. ieltsxpress
- 30. Talc is employed as a filler of base.
- 31. Talc is modified and prevented sunburn.
- 32. Talc is added to stop the stickiness.
- 33. Talc is used to increase production.

Complete the following summary of the paragraphs of Reading Passage, using NO MORE THAN TWO WORDS. Write your answers in boxes 34-39 on your answer sheet.

Spanish olive oil industry has been using talc in the oil extraction process for about **34**_____ years. It is useful in dealing with difficult olives which often produce a high amount of **35**_____ because of the high content of solid materials. When smaller factories release **36**_____, it could be **37**_____ to the environment because it is hard to **38**_____ and usually takes time as it contains emulsified.

However, talc powder added in the process is able to absorb the emulsifier oil. It improves the oil extraction production because with the aid of talc powder, size of oil **39** _____ increased.

Answer the question below using NO MORE THAN THREE WORDS from the passage for each answer. Write your answer in box 40 on your answer sheet.

40. In which process is talc used to clear the stickiness of chewing gum?

Student Space:

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Practice Test 8

Reading Passage 1

Instructions to follow

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

The Sweet Scent of Success

A. Innovation and entrepreneurship, in the right mix, can bring spectacular results and propel a business ahead of the pack. Across a diverse range of commercial successes, from the Hills Hoist clothes line to the Cochlear ear implant, it is hard to generalize beyond saying the creators tapped into something consumers could not wait to get their hands on. However, most ideas never make it to the market. Some ideas that innovators are spruiking to potential investors include new water-saving shower heads, a keyless locking system, ping-pong balls that keep pollution out of rainwater tanks, making teeth grow from stemcells inserted in the gum, and technology to stop LPG tanks from exploding. Grant Kearney, chief executive of the Innovation Xchange, which connects businesses to innovation networks, says he hears of great business ideas that he knows will never get on the market. "Ideas by themselves are absolutely useless," he says. "An idea only becomes innovation when it is connected to the right resources and capabilities".

B. One of Australia's latest innovation successes stems from a lemon-scented bath-room cleaner called Shower Power, the formula for which was concocted in a factory in Yatala, Queensland. In 1995, Tom Quinn and John Heron bought a struggling cleaning products business, OzKleen, for 250,000. It was selling 100 different kinds of cleaning products, mainly in bulk. The business was in bad shape, the cleaning formulas were ineffective and environmentally harsh, and there were few regular clients. Now Shower Power is claimed to be the top-selling bathroom cleaning product in the country. In the past 12 months, almost four million bottles of OzKleen's Power products have been sold and the company forecasts 2004 sales of 10 million bottles. The company's sales in 2003 reached \$11 million, with 700k of business being exports. In particular, Shower Power is making big inroads on the British market.

C. OzKleen's turnaround began when Quinn and Heron hired an industrial chemist to revitalize the product line. Market research showed that people were looking for a better cleaner for the bathroom, universally regarded as the hardest room in the home to clean. The company also wanted to make the product formulas more environmentally friendly. One of Tom Quinn's sons, Peter, aged 24 at the time, began working with the chemist on the formulas, looking at the potential for citrus-based cleaning products. He detested all the chlorine-based cleaning products that dominated the market. "We didn't want to use chlorine, simple as that," he says. "It offers bad working conditions and there's no money in it." Peter looked at citrus ingredients, such as orange peel, to replace the petroleum by-products in cleaners. He is credited with finding the Shower Power formula. "The head," he says. The company is the recipe is in a vault somewhere and in my sole owner of the intellectual property.

D. To begin with, Shower Power was sold only in commercial quantities but Tom Quinn decided to sell it in 750ml bottles after the constant “raves” from customers at their retail store at Beenleigh, near Brisbane. Customers were travelling long distances to buy supplies. Others began writing to OzKleen to say how good Shower Power was. “We did a dummy label and went to see Woolworths,” Tom Quinn says. The Woolworths buyer took a bottle home and was able to remove a stain from her basin that had been impossible to shift. From that point on, she championed the product and OzKleen had its first super-market order, for a palette of Shower Power worth \$3000. “We were over the moon,” says OzKleen’s financial controller, Belinda McDonnell.

E. Shower Power was released in Australian supermarkets in 1997 and became the top-selling product in its category within six months. It was all hands on deck at the factory, labeling and bottling Shower Power to keep up with demand. OzKleen ditched all other products and rebuilt the business around Shower Power. This stage, recalls McDonnell, was very tough. “It was hand-to-mouth, cashflow was very difficult,” she says. OzKleen had to pay new-line fees to supermarket chains, which also squeezed margins.

F. OzKleen’s next big break came when the daughter of a Coles Myer executive used the product while on holidays in Queensland and convinced her father that Shower Power should be in Coles supermarkets. Despite the product success, Peter Quinn says the company was wary of how long the sales would last and hesitated to spend money on upgrading the manufacturing process. As a result, he remembers long periods of working round the clock to keep up with orders. Small tanks were still being used, so batches were small and bottles were labelled and filled manually. The privately owned OzKleen relied on cash flow to expand.

"The equipment could not keep up with demand," Peter Quinn says. Eventually a new bottling machine was bought for \$50,000 in the hope of streamlining production, but he says: "We got ripped off." Since then, he has been developing a new automated bottling machine that can control the amount of foam produced in the liquid, so that bottles can be filled more effectively – "I love coming up with new ideas." The machine is being patented.

G. Peter Quinn says OzKleen's approach to research and development is open slather. "If I need it, I get it. It is about doing something simple that no one else is doing. Most of these things are just sitting in front of people ... it's just seeing the opportunities." With a tried and tested product, OzKleen is expanding overseas and developing more Power-brand household products. Tom Quinn, who previously ran a real estate agency, says: "We are competing with the same market all over the world, the cleaning products are sold everywhere." Shower Power, known as Bath Power in Britain, was launched four years ago with the help of an export development grant from the Federal Government. "We wanted to do it straight away because we realised we had the same opportunities worldwide." OzKleen is already number three in the British market, and the next stop is France. The Power range includes cleaning products for carpets, kitchens and pre-wash stain removal. The Quinn and Heron families are still involved. OzKleen has been approached with offers to buy the company, but Tom Quinn says he is happy with things as they are. "We're having too much fun."

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

1. Description of one family member persuading another of selling cleaning products
2. An account of the cooperation of all factory staff to cope with sales increase
3. An account of the creation of the formula of Shower Power
4. An account of buying the original OzKleen company
5. Description of Shower Power's international expansion
6. The reason of changing the packaging size of Shower Power
7. An example of some innovative ideas

Look at the following people and list of statements below. Match each person with the correct statement. Write the correct letter A-E in boxes 8-11 on your answer sheet

List of Statements

- A. Described his story of selling his product to a chain store
 - B. Explained there was a shortage of money when sales suddenly increased
 - C. Believe innovations need support to succeed
 - D. Believes new products like Shower Power may incur risks
 - E. Says business won't succeed with innovations
-
8. Grant Kearney
 9. Tom Quinn
 10. Peter Quinn
 11. Belinda McDonnell

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

Write your answers in boxes 12–13 on your answer sheet.

12. Tom Quinn changed the bottle size to 750ml to make Shower Power

- A.** Easier to package.
- B.** Appealing to individual customers.
- C.** Popular in foreign markets.
- D.** Attractive to supermarkets.

13. Why did Tom Quinn decide not to sell OzKleen?

- A.** No one wanted to buy OzKleen.
- B.** New products were being developed in OzKleen.
- C.** He couldn't make an agreement on the price with the buyer.
- D.** He wanted to keep things unchanged.

Reading Passage 2

Instructions to follow

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

Timekeeper Invention of Marine Chronometer

A. Up to the middle of the 18th century, the navigators were still unable to exactly identify the position at sea, so they might face a great number of risks such as the shipwreck or running out of supplies before arriving at the destination. Knowing one's position on the earth requires two simple but essential coordinates, one of which is the longitude.

B. The longitude is a term that can be used to measure the distance that one has covered from one's home to another place around the world without the limitations of naturally occurring baseline like the equator. To determine longitude, navigators had no choice but to measure the angle with the naval sextant between Moon centre and a specific star— lunar distance— along with the height of both heavenly bodies. Together with the nautical almanac, Greenwich Mean Time (GMT) was determined, which could be adopted to calculate longitude because one hour in GMT means 15-degree longitude. Unfortunately, this approach laid great reliance on the weather conditions, which brought great inconvenience to the crew members. Therefore, another method was proposed, that is, the time difference between the home time and the local time served for the measurement. Theoretically, knowing the longitude position was quite simple, even for the people in the middle of the sea with no land in sight. The key element for calculating the distance travelled was to know, at the very moment, the accurate home time. But the greatest problem is: how can a sailor know the home time at sea?

C. The simple and again obvious answer is that one takes an accurate clock with him, which he sets to the home time before leaving. A comparison with the local time (easily identified by checking the position of the Sun) would indicate the time difference between the home time and the local time, and thus the distance from home was obtained. The truth was that nobody in the 18th century had ever managed to create a clock that could endure the violent shaking of a ship and the fluctuating temperature while still maintaining the accuracy of time for navigation.

D. After 1714, as an attempt to find a solution to the problem, the British government offered a tremendous amount of £20,000, which were to be managed by the magnificently named 'Board of Longitude'. If timekeeper was the answer (and there could be other proposed solutions, since the money wasn't only offered for timekeeper), then the error of the required timekeeping for achieving this goal needed to be within 2.8 seconds a day, which was considered impossible for any clock or watch at sea, even when they were in their finest conditions.

E. This award, worth about £2 million today, inspired the self-taught Yorkshire carpenter John Harrison to attempt a design for a practical marine clock. In the later stage of his early career, he worked alongside his younger brother James. The first big project of theirs was to build a turret clock for the stables at Brockelsby Park, which was revolutionary because it required no lubrication. Harrison designed a marine clock in 1730, and he travelled to London in seek of financial aid. He explained his ideas to Edmond Halley, the Astronomer Royal, who then introduced him to George Graham, Britain's first-class clockmaker. Graham provided him with financial aid for his early-stage work on sea clocks. It took Harrison five years to build Harrison Number One or H1. Later, he sought the improvement from alternate design and produced H4 with the giant clock appearance. Remarkable as it was, the Board of Longitude wouldn't grant him the prize for some time until it was adequately satisfied.

F. Harrison had a principal contestant for the tempting prize at that time, an English mathematician called John Hadley, who developed sextant. The sextant is the tool that people adopt to measure angles, such as the one between the Sun and the horizon, for a calculation of the location of ships or planes. In addition, his invention is significant since it can help determine longitude.

G. Most chronometer forerunners of that particular generation were English, but that doesn't mean every achievement was made by them. One wonderful figure in the history is the Lancastrian Thomas Earnshaw, who created the ultimate form of chronometer escapement—the spring detent escapement—and made the final decision on format and productions system for the marine chronometer, which turns it into a genuine modern commercial product, as well as a safe and pragmatic way of navigation at sea over the next century and half.

Reading Passage 2 has seven paragraphs, A-G. Which paragraph contains the following information? Write the correct letter, A-G, in boxes 14–18 on your answer sheet. You may use any letter more than once.

- 14.** a description of Harrison's background
- 15.** problems caused by poor ocean navigation
- 16.** the person who gave financial support to Harrison
- 17.** an analysis of the long-term importance of sea clock invention
- 18.** the practical usage of longitude

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

In boxes 19–21 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

19. In theory, sailors can easily calculate their longitude position at sea.

20. To determine longitude, the measurement of the distance from the Moon to the given star is a must.

21. Greenwich Mean Time was set up by the English navigators.

Complete the sentences below.

Choose NO MORE THAN TWO WORDS AND/OR A NUMBER from the passage for each answer. Write your answers in boxes 22–27 on your answer sheet.

22 Sailors were able to use the position of the Sun to calculate _____

23 An invention that could win the competition would lose no more than

_____ every day. **24** John and James Harrison's clock worked accurately without _____

25 Harrison's main competitor's invention was known as _____

26 Hadley's instrument can use _____ to make a calculation of location of ships or planes.

27 The modern version of Harrison's invention is called _____. Timekeeper Invention of Marine Chronometer.

Reading Passage 3

Instructions to follow

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

Eco-Resort Management Practices

A. Ecotourism is often regarded as a form of nature-based tourism and has become an important alternative source of tourists. In addition to providing the traditional resort-leisure product, it has been argued that ecotourism resort management, an educational and interpretive component, and direct and indirect contributions to the conservation of the natural and cultural environment (Ayala, 1996).

B. Couran Cove Island Resort is a large integrated ecotourism-based resort located south of Brisbane on the Gold Coast, Queensland, Australia. As the world's population becomes increasingly urbanized, the demand for tourist attractions which are environmentally friendly, serene and offer amenities of a unique nature, has grown rapidly. Couran Cove Resort, which is one such tourist attractions, is located on South Stradbroke Island, occupying approximately 150 hectares of the island. South Stradbroke Island is separated from the mainland by the Broadwater, a stretch of sea 3 kilometers wide more than a century ago, there was only one Stradbroke Island, and there were at least four aboriginal tribes living and hunting on the island. Regrettably, most of the original island dwellers were eventually killed by diseases such as tuberculosis, smallpox and influenza by the end of the 19th century.

The second shipwreck on the island in 1894, and subsequent destruction of the ship (the Cambus Wallace) because it contained dynamite, caused a large crater in the sandhills on Stradbroke Island. Eventually, the ocean broke through the weakened landform and Stradbroke became two islands. Couran Cove Island Resort is built on one of the world's few naturally-occurring sand lands, which is home to a wide range of plant communities and one of the largest remaining remnants of the rare *Livistona* rainforest left on the Gold Coast. Many mangrove and rainforest areas and Melaleuca Wetlands on South Stradbroke Island (and in Queensland) have been cleared, drained or filled for residential, industrial, agricultural or urban development in the first half of the 20th century. Farmers and graziers finally abandoned South Stradbroke Island in 1939 because the vegetation and the soil conditions there were not suitable for agricultural activities.

SUSTAINABLE PRACTICES OF COURANT

Cove Resort Being located on an offshore island, the resort is only accessible by means of water transportation. The resort provides hourly ferry service from the marina on the mainland to and from the island. Within the resort, transport modes include walking trails, bicycle tracks and the beach train. The reception area is the counter of the shop which has not changed in 8 years at least. The accommodation is an octagonal "Bure". These are large rooms that are clean but! The equipment is tired and in some cases just working. Our ceiling fan only worked on high speed for example. Beds are hard but clean, there are a television, radio, and old air conditioner and a small fridge. These "Bures" are right on top of each other and night noises do carry so be careful what you say and do. The only thing is the mosquitos but if you forget to bring mosquito repellent they sell some on the island. As an ecotourism-based resort, most of the planning and development of the attraction has been concentrated on the need to co-exist with the fragile natural environment of South Stradbroke Island to achieve sustainable development.

WATER AND ENERGY MANAGEMENT

C. South Stradbroke Island has groundwater at the centre of the island, which has a maximum height of 3 metres above sea level. The water supply is recharged by rainfall and is commonly known as an unconfined freshwater aquifer. Couran Cove Island Resort obtains its water supply by tapping into this aquifer and extracting it via a bore system. Some of the problems which have threatened the island's freshwater supply include pollution, contamination and over-consumption. In order to minimise some of these problems, all laundry activities are carried out on the mainland. The resort considers washing machines as onerous to the island's freshwater supply, and that the detergents contain a high level of phosphates which are a major source of water pollution. The resort uses LPG-power generation rather than a diesel-powered plant for its energy supply, supplemented by a wind turbine, which has reduced greenhouse emission by 70% of diesel-equivalent generation methods. Excess heat recovered from the generator is used to heat the swimming pool. Hot water in the eco-cabins and for some of the resort's vehicles are solar-powered. Water-efficient fittings are also installed in showers and toilets. However, not all the appliances used by the resort are energy efficient, such as refrigerators. Visitors who stay at the resort are encouraged to monitor their water and energy usage via the in-house television systems and are rewarded with prizes (such as a free return trip to the resort) accordingly if their usage level is low.

D. We examined a case study of good management practice and a pro active sustainable tourism stance of an eco-resort. In three years of operation, Couran Cove Island Resort has won 23 international and national awards, including the 2001 Australian Tourism Award in the 4-Star Accommodation category.

The resort has embraced and has effectively implemented contemporary environmental management practices. It has been argued that the successful implementation of the principles of sustainability should promote long-term social, economic and environmental benefits while ensuring and enhancing the prospects of continued viability for the tourism enterprise. Couran Cove Island Resort does not conform to the characteristics of the Resort Development Spectrum, as proposed by Prideaux (2000). According to Prideaux, the resort should be at least at Phase 3 of the model (the National tourism phase), which describes an integrated resort providing 3-4 star hotel-type accommodation. The primary tourist market in Phase 3 of the model consists mainly of interstate visitors. However, the number of interstate and international tourists visiting the resort is small, with the principal visitor markets comprising locals and residents from nearby towns and the Gold Coast region. The carrying capacity of Couran Cove does not seem to be of any concern to the Resort management. Given that it is a private, regulating the number of visitors to the resort to minimize the damage done to the natural environment on South Stradbroke Island is not a binding constraint. However, the Resort's growth will eventually be constrained by its carrying capacity, and quantity control should be incorporated into the management strategy of the resort.

Choose the correct letter, A, B, C or D. Write your answers in boxes 28-32 on your answer sheet.

28. the Stradbroke became two islands

- A.** by intended destruction of the ship of the Cambus Wallace
- B.** by an explosion of dynamite on a ship and following nature erosion
- C.** by the movement sandhills on Stradbroke Island
- D.** by the volcanic eruption on the island

29. Why are laundry activities for the resort carried out on the mainland?

- A.** In order to obtain its water supply via a bore system
- B.** In order to preserve the water and anti-pollution
- C.** In order to save the cost of installing onerous washing machines
- D.** In order to reduce the level of phosphates in the water around

30. What is the major water supplier in South Stradbroke Island is by

- A.** desalinating the seawater
- B.** collecting the rainfall
- C.** transporting from the mainland
- D.** boring groundwater

31. What is applied for heating water on Couran Cove Island Resort

- A.** the LPG-power
- B.** a diesel-powered plant
- C.** the wind power
- D.** the solar-power

32. What does, as the managers of resorts believe, the prospective future focus on

- A.** more awards for resort's accommodation
- B.** sustainable administration and development in the long run
- C.** Economic and environmental benefits for the tourism enterprise
- D.** successful implementation of the Resort Development Spectrum

Complete the following summary of the paragraphs of Reading Passage. Using NO MORE THAN TWO WORDS from the Reading Passage for each answer. Write your answers in boxes 33–37 on your answer sheet.

Being located away from the mainland, tourists can attain the resort only by **33** _____ in a regular service. Within the resort, transports include trails for walking or tracks for both **34** _____ and the beach train. The on- island equipment is old-fashioned which is barely working such as the **35** _____ overhead. There is television, radio, an old **36** _____ and a small fridge. And you can buy the repellent for **37** _____ if you forget to bring some.

Choose THREE correct letters among A–E Write your answers in boxes 38–40 on your answer sheet.

What is true as to the contemporary situation of Couran Cove Island Resort in the last paragraph?

- A.** Couran Cove Island Resort goes for more eco-friendly practices
- B.** the accommodation standard only conforms to the Resort Development Spectrum of Phase 3
- C.** Couran Cove Island Resort should raise the accommodation standard and build more facilities
- D.** the principal group visiting the resort is international tourists
- E.** its carrying capacity will restrict the future business' expansion.

Practice Test 9

Reading Passage 1

Instructions to follow

You should spend 20 minutes on Questions 1–14 which are based on Reading Passage 1.

Mimicking Mother Nature

A. Researchers and designers around the globe endeavor to create new technologies that, by honoring the tenets of life, are both highly efficient and often environmentally friendly. And while biomimicry is not a new concept (Leonardo da Vinci looked to nature to design his flying machines, for example, and pharmaceutical companies have long been miming plant organisms in synthetic drugs), there is a greater need for products and manufacturing processes that use a minimum of energy, materials, and toxins. What's more, due to technological advancements and a newfound spirit of innovation among designers, there are now myriad ways to mimic Mother Nature's best assets.

B. "We have a perfect storm happening right now," says Jay Harman, an inventor and CEO of PAX Scientific, which designs fans, mixers, and pumps to achieve maximum efficiency by imitating the natural flow of fluids. "Shapes in nature are extremely simple once you understand them, but to understand what geometries are at play, and to adapt them, is a very complex process.

We only just recently have had the computer power and manufacturing capability to produce these types of shapes.” “If we could capture nature’s efficiencies across the board, we could decrease dependency on fuel by at least 50 percent,” Harman says. “What we’re finding already with the tools and methodology we have right now is that we can reduce energy consumption by between 30 and 40 percent.”

C. It’s only recently that mainstream companies have begun to equate biomimicry with the bottom line. DaimlerChrysler, for example, introduced a prototype car modeled on a coral reef fish. Despite its boxy, cube-shaped body, which defies a long-held aerodynamic standard in automotive design (the raindrop shape), the streamlined boxfish proved to be aerodynamically ideal and the unique construction of its skin—numerous hexagonal, bony plates—a perfect recipe for designing a car of maximum strength with minimal weight.

D. Companies and communities are flocking to Janine Benyus, author of the landmark book *Biomimicry: Innovation Inspired by Nature* (Perennial, 2002) and cofounder of the Biomimicry Guild, which seats biologists at the table with researchers and designers at companies such as Nike, Interface carpets, Novell, and Procter & Gamble. Their objective is to marry industrial problems with natural solutions.

E. Benyus, who hopes companies will ultimately transcend mere product design to embrace nature on a more holistic level, breaks biomimicry into three tiers. On a basic (albeit complicated) level, industry will mimic nature’s precise and efficient shapes, structures, and geometries. The microstructure of the lotus leaf, for example, causes raindrops to bead and run off immediately, while self-cleaning and drying its surface—a discovery that the British paint company Sto has exploited in a line of building paints.

The layered structure of a butterfly wing or a peacock plume, which creates iridescent color by refracting light, is being mimicked by cosmetics giant L'Oreal in a soon-to-be-released line of eye shadow, lipstick, and nail varnish.

F. The next level of biomimicry involves imitating natural processes and biochemical “recipes”: Engineers and scientists are now looking at the nasal glands of seabirds to solve the problem of desalination; the abalone’s ability to self-assemble its incredibly durable shell in water, using local ingredients, has inspired an alternative to the conventional, and often toxic, “heat, beat, and treat” manufacturing method. How other organisms deal with harmful bacteria can also be instructive: Researchers for the Australian company Biosignal, for instance, observed a seaweed that lives in an environment teeming with microbes to figure out how it kept free of the same sorts of bacterial colonies, called biofilms, that cause plaque on your teeth and clog up your bathroom drain. They determined that the seaweed uses natural chemicals, called furanones, that jam the cell-to-cell signaling systems that allow bacteria to communicate and gather.

G. Ultimately, the most sophisticated application of biomimicry, according to Benyus, is when a company starts seeing itself as an organism in an economic ecosystem that must make thrifty use of limited resources and creates symbiotic relationships with other organisms. A boardroom approach at this level begins with imagining any given company, or collection of industries, as a forest, prairie, or coral reef, with its own “food web” (manufacturing inputs and outputs) and asking whether waste products from one manufacturing process can be used, or perhaps sold, as an ingredient for another industrial activity. For instance, Geoffrey Coates, a chemist at Cornell, has developed a biodegradable plastic synthesized from carbon dioxide and limonene (a major component in the oil extracted from citrus rind) and is working with a cement factory to trap their waste CO₂ and use it as an ingredient.

H. Zero Emissions Research and Initiatives (ZERI), a global network of scientists, entrepreneurs, and educators, has initiated eco-industrial projects that attempt to find ways to reuse all wastes as raw materials for other processes. Storm Brewing in Newfoundland, Canada—in one of a growing number of projects around the world applying ZERI principles—is using spent grains, a by-product of the beer-making process, to make bread and grow mushrooms. As industries continue to adopt nature's models, entire manufacturing processes could operate locally, with local ingredients like the factories that use liquefied beach sand to make windshields. As more scientists and engineers begin to embrace biomimicry, natural organisms will come to be regarded as mentors, their processes deemed masterful.

Look at the following descriptions mentioned in Reading Passage 1. Match the three kinds of levels (A-C) listed below the descriptions. Write the appropriate letters, A-C, in boxes 1-6 on your answer sheet.

- A.** First level: mimic nature's precise and efficient shapes, structures, and geometries
- B.** Second level: imitating natural processes and biochemical 'recipes'
- C.** Third level: creates symbiotic relationships with other like organisms

- 1.** Synthesized Plastic, developed together with cement factory, can recycle waste gas.
- 2.** Cosmetics companies produce a series of shine cosmetics colours
- 3.** People are inspired how to remove excess salt inspired by nature.
- 4.** Daimler Chrysler introduced a fish-shaped car.
- 5.** Marine plan company integrated itself into a part in economic ecosystem
- 6.** natural chemicals developed based on seaweed known to kill bacteria

Do the following statements agree with the information given in Reading Passage 1? In boxes 7–14 on your answer sheet, write

- **YES – if the statement is true**
- **NO – if the statement is false**
- **NOT GIVEN – if the information is not given in the passage**

7. Biomimicry is a totally new concept that has been unveiled recently.

8. Leonardo da Vinci has been the first designer to mimic nature

9. Scientists believe it involves more than mimicking the shape to capture the design in nature

10. We can save the utilisation of energy by up to 40% if we take advantage of the current findings.

11. Daimler Chrysler's prototype car modelled on a coral reef fish is a best-seller.

12. Some great companies and communities themselves are seeking solutions beyond their own industrial scope

13. The British paint company Sto did not make the microstructure of the lotus leaf, applicable

14. a Canadian beer Company increased the production by applying ZERI principles

Reading Passage 2

Instructions to follow

You should spend 20 minutes on Questions 15–27 which are based on Reading Passage 2.

LONGAEVA: Ancient Bristlecone Pine

A. To understand more about the earth's history, humans have often looked to the natural environment for insight into the past. The bristlecone pine (*Pinus longaeva*), of the White Mountains in California, has served this purpose greater than any other species of tree on the planet. Conditions here are brutal: scant precipitation and low average temperatures mean a short growing season, only intensified by ferocious wind and mal-nutritious rocky. Nevertheless, bristlecone pines have claimed these barren slopes as their permanent home. Evolving here in this harsh environment, super-adapted and without much competition, bristlecones have earned their seat on the longevity throne by becoming the oldest living trees on the planet. Results of extensive studies on bristlecone pine stands have shown that in fact such environmental limitations are positively associated with the attainment of great age. This intriguing phenomenon will be discussed further on.

B. But exactly how old is old? Sprouted before the invention of Egyptian hieroglyphs and long before the teachings of Jesus of Nazareth, Methuselah is the oldest bristlecone alive at roughly 4,700 years. Although specimens of this age do not represent the species' average, there are 200 trees more than 3,000 years old, and two dozen more than 4,000. Considering that these high ages are obtained in the face of such remarkable environmental adversity, the bristlecone pines have become the focus of much scientific examination over the past half century.

C. Perhaps most interested in the bristlecone pine are dendochronologists, or tree-ring daters. With every strenuous year that passes in the White Mountains, each bristlecone grows and forms a new outer layer of cambium that reflects a season's particular ease or hardship. So while, growing seasons may expand or shrink, the trees carry on, their growth rings faithfully recording the bad years alongside the goods. Through examining the annual growth rings of both living and dead specimens, taking thousands of core samples, and by processes of cross-dating between trees and other qualitative records, scientists have compiled a continuous tree-ring record that dates back to the last Ice Age between eight and ten thousand years ago. Among other linked accomplishments, this record has enhanced the dating process, helping to double-check and correct the radiocarbon-14 method to more accurately estimate the age of organic material.

D. Now more than ever the importance of monitoring the bristlecone is being realized. As our global climate continues to undergo its most recent and abrupt atmospheric change, these ancient scribes continue to respond. Since, the rings of wood formed each year reveal the trees' response to climatic conditions during a particular growing seasons, in their persistence they have left US natural recordings of the past, markers of the present, and clues to the future.

E. The species' name originates from the appearance of its unusual cones and needles. The bristlecone's short, pale needles are also trademarks, bunching together to form foxtail-like bundles. As is the case of most conifer needles, these specialized leaves cluster together to shelter the stomata so very little moisture is lost through them. This adaptation helps the bristlecone photosynthesize during particularly brutal months, saving the energy of constant needle replacement and providing a stable supply of chlorophyll.

For a plant trying to store so much energy, bristlecone seeds are relatively large in size. They are first reproduced when trees reach ages between thirty and seventy-five years old. Germination rates are generally high, in part because seeds require little to no initial stratification. Perhaps the most intriguing physical characteristic of a mature bristlecone, however, is its ratio of living to dead wood on harsh sites and how this relates to old age. In older trees, however, especially in individuals over 1,500 years, a strip-bark trait is adaptive. This condition occurs as a result of cambium dieback, which erodes and thereby exposes certain areas of the bole, leaving only narrow bands of bark intact.

F. The technique of cambial edge retreat has helped promote old age in bristlecone pine, but that certainly is not the only reason. Most crucial to these trees' longevity is their compact size and slow rates of growth. By remaining in most cases under ten meters tall, bristlecones stay close to the limited water supply and can hence support more branches and photosynthesizing. Combined with the dry, windy, and often freezing mountain, slow growth guarantees the bristlecones' tight, fibrous rings with a high resin content and structural strength. The absence of natural disaster has also safeguarded the bristlecone's lengthy lifespan. Due to a lack of ground cover vegetation and an evenly spaced layout, bristlecone stands on the White Mountain peaks have been practically unaffected by fire. This lack of vegetation also means a lack of competition for the bristlecones.

G. Bristlecone pine is restricted to numerous, rather isolated stands at higher altitudes in the southwestern United States. Stands occur from the Rocky Mountains, through the Colorado Plateau, to the western margin of the Great Basin. Within this natural range, the oldest and most widely researched stands of bristlecones occur in California's White Mountains. Even just 200 miles away from the Pacific Ocean, the White Mountains are home to one of this country's few high-elevation deserts.

Located in the extreme eastern rain shadow of the Sierra Nevada, this region receives only 12.54 inches of precipitation per year and experiences temperatures between -20F and +50F. The peaks south of the Owens Valley, are higher up than they might appear from a distance. Although most summits exist somewhere around 11,000 feet, snow-capped White Mountain Peak, for which the range is named, stands at 14,246 feet above sea level. That said, to reach areas of pure bristlecone is an intense journey all to itself.

H. With seemingly endless areas of wonder and interest, the bristlecone pines have become subject to much research over the past half-century. Since the annual growth of these ancient organisms directly reflects the climatic conditions of a particular time period, bristlecones are of greatest significance to dendochronologists, or tree-ring specialists. Dating any tree is simple and can be done within reasonable accuracy just by counting out the rings made each year by the plant's natural means of growth. By carefully compiling a nearly 10,000- year-old bristlecone pine record, these patient scientists have accurately corrected the carbon-14 dating method and estimated ages of past periods of global climate change. What makes this record so special to dendochronologists, too, is that, nowhere, throughout time, is precisely the same long-term sequence of wide and narrow rings repeated, because year-to-year variations in climate are never exactly the same.

I. Historically the bristlecone's remote location and gnarled wood have deterred commercial extraction, but nothing on earth will go unaffected by global warming. If temperatures rise by only 6 degrees F, which many experts say is likely this century, about two-thirds of the bristlecones' ideal habitat in the White Mountains effectively will be gone. Almost 30,000 acres of National Forest now preserves the ancient bristlecone, but paved roads, campsites, and self-guided trails have led only to more human impact. In 1966, the U.S.F.S reported over 20,000 visitors to the Ancient Bristlecone Pine Forest, a figure which could exceed 40,000 today.

Over the past hundreds of thousands of years, this species has endured in one of earth's most trying environments; they deserve our respect and reverence. As global climate change slowly alters their environment, we as humans must do our part to raise awareness and lower our impact.

The reading Passage has nine paragraphs A-I. Which paragraph contains the following information? Write the correct letter A-I, in boxes 15-18 on your answer sheet.

- 15.** Human activity threatens bristlecone pines habitat
- 16.** Explanations for ring of bristlecone pines
- 17.** An accountable recording provided from the past till now
- 18.** Survived in hostile environment

**Choose the correct letter, A, B, c or D.
Write your answers in boxes 19-21 on your answer sheet.**

19. According to passage A, what aspect of bristlecone pines attracts author's attention?

- A.** Brutal environment they live
- B.** Remarkable long age
- C.** They only live in California
- D.** Outstanding height

20. Why do we investigate Bristlecone pines in higher altitudes of California's White Mountains?

- A.** Because oldest ones researched in this region
- B.** Because most bizarre ones are in this region
- C.** Because precipitation is rich in this region
- D.** Because sea level is comparatively high in this region

21. Why there are repeated patterns of wide and narrow rings?

- A.** Because sea level rises which affects tree ring
- B.** Because tree ring pattern is completely random
- C.** Because ancient organisms affect its growth
- D.** Because variation of climate change is different

Complete the following summary of the paragraphs of Reading Passage, using NO MORE THAN THREE WORDS from the Reading Passage for each answer.

Write your answers in boxes 22–27 on your answer sheet.

The bristlecone's special adaptation is benefit for photosynthesizing, and reserving the **22.**_____ of leave replacement and providing sufficient chlorophyll. Probably because seeds do not rely on primary **23.**_____, Germination rate is high. Because of cambium dieback, only narrow **24.**_____ remain complete. Due to multiple factors such as windy, cold climate and **25.**_____, bristlecones' rings have tight and solid structure full of resin. Moreover, bristlecone stands are safe from fire because of little **26.**_____ plants spread in this place. The summits of Owens Valley is higher than they emerge if you observe from a **27.**_____

Reading Passage 3

Instructions to follow

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

A Disaster of Titanic Proportions

A. At 11:39 p.m. on the evening of Sunday, 14 April 1912, lookouts Frederick Fleet and Reginald Lee on the forward mast of the Titanic sighted an eerie, black mass coming into view directly in front of the ship. Fleet picked up the phone to the helm, waited for Sixth Officer Moody to answer, and yelled: "Iceberg, right ahead!" The greatest disaster in maritime history was about to be set in motion.

B. Thirty-seven seconds later, despite the efforts of officers in the bridge and engine room to steer around the iceberg, the Titanic struck a piece of submerged ice, bursting rivets in the ship's hull and flooding the first five watertight compartments. The ship's designer, Thomas Andrews, carried out visual inspection of the ship's damage and informed Captain Smith at midnight that the ship would sink in less than two hours. By 12:30 a.m., the lifeboats were being filled with women and children, after Smith had given the command for them to be uncovered and swung out 15 minutes earlier. The first lifeboat was successfully lowered 15 minutes later, with only 28 of its 65 seats occupied. By 1:15 a.m., the waterline was beginning to reach the Titanic's name on the ship's bow, and over the next hour, every lifeboat would be released as officers struggled to maintain order amongst the growing panic on board.

C. The dosing moments of the Titanic's sinking began shortly after 2 a.m., as the last lifeboat was lowered and the ship's propellers lifted out of the water, leaving the 1,500 passengers still on board to surge towards the stern. At 2:17 a.m., Harold Bride and Jack Philips tapped out their last wireless message after being relieved of duty as the ship's wireless operators, and the ship's band stopped playing. Less than a minute later, occupants of the lifeboats witnessed the ship's lights flash once, then go black, and a huge roar signaled the Titanic's contents plunging towards the bow, causing the front half of the ship to break off and go under. The Titanic's stem bobbed up momentarily, and at 2:20 a.m., the ship finally disappeared beneath the frigid waters.

D. What or who was responsible for the scale of this catastrophe? Explanations abound, some that focus on very small details. Due to a last-minute change in the ship's officer line-up, iceberg lookouts Frederick Fleet and Reginald Lee were making do without a pair of binoculars that an officer transferred off the ship in Southampton had left in a cupboard onboard, unbeknownst to any of the ship's crew. Fleet, who survived the sinking, insisted at a subsequent inquiry that he could have identified the iceberg in time to avert disaster if he had owned the binoculars.

E. Less than an hour before the Titanic struck the iceberg, wireless operator Cyril Evans on California, located just 20 miles to the north, tried to contact operator Jack Philips on the Titanic to warn him of pack ice in the area. "Shut up, shut up, you're jamming my signal," Philips replied. "I'm busy." The Titanic's wireless system had broken down for several hours earlier that day, and Philips was clearing a backlog of personal messages that passengers had requested to be sent to family and friends in the USA. Nevertheless, Captain Smith had maintained the ship's speed of 22 knots despite multiple earlier warnings of ice ahead.

It has been suggested that Smith was under pressure to make headlines by arriving early in New York, but maritime historians such as Richard Howell have countered this perception, noting that Smith was simply following common procedure at the time, and not behaving recklessly.

F. One of the strongest explanations for the severe loss of life has been the fact that the Titanic did not carry enough lifeboats for everyone on board. Maritime regulations at the time tied lifeboat capacity to the ship size, not to the number of passengers on board. This meant that the Titanic, with room for 1,178 of its 2,222 passengers, actually surpassed the Board of Trade's requirement that it carry lifeboats for 1,060 of its passengers. Nevertheless, with lifeboats being lowered less than half full in many cases, and only 712 passengers surviving despite a two-and-a-half-hour window of opportunity, more lifeboats would not have guaranteed more survivors in the absence of better training and preparation. Many passengers were confused about where to go after the order to launch lifeboats was given; a lifeboat drill scheduled for earlier on the same day that the Titanic struck the iceberg was cancelled by Captain Smith to allow passengers to attend church.

Choose **NO MORE THAN TWO WORDS** from the text for each answer of questions 28–33.

Time Person's Position Action 11:39 p.m (28) _____

(29) A reported sighting of the ice _____

(30) _____ Andrews Ship's designer Reported how long the Titan
afloat 12:15 a.m Smith Captain Ordered (31) _____ to be 2:17 a.m

Bride & Philips (32) _____. Relayed final (33) _____

Do the following statements agree with the information given in Reading Passage 1? In boxes 34–40 on your answer sheet, write

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

34. The binoculars for the men on watch had been left in a crew locker in Southampton.

35. The missing binoculars were the major factor leading to the collision with the iceberg.

36. Philips missed notification about the ice from Evans because the Titanic's wireless system was not functioning at the time.

37. Captain Smith knew there was ice in the area.

38. Howell believed the captain's failure to reduce speed was an irresponsible action.

39. The Titanic was able to seat more passengers in lifeboats than the Board of Trade required.

40. A lifeboat drill would have saved more lives.

Practice Test 10

Reading Passage 1

Instructions to follow

You should spend 20 minutes on Questions 1-14 which are based on Reading Passage 1.

Making a sound Investment Decision

As investors tire of stock market instability, the idea of owning a piece of real estate is gaining in popularity. Now, not everyone has what it takes to become a landlord, but if you can make a go of it, it certainly has the potential to become a good money-earner. Here are some tips from successful real estate mogul, Janet Anderson, on how to start building up your property portfolio.

According to Janet, one of the best ways to identify a bargain is to hunt for foreclosures. Foreclosures are properties banks have repossessed because their owners were unable to meet the mortgage repayments. Banks want a quick sell on these places, Janet says. They want to cut their losses and get their money back as quickly as possible. Developing a network – making connections with city clerks and bank employees who know which properties are about to be sold – can be an excellent way to identify such bargains.

And bargains they certainly can prove to be; in a recent firesale auction ('firesale auction' is the phrase that has been coined to describe auction-room events dedicated entirely to the disposal of repossessed assets) a house with a market value nearing \$1,000,000, but with a low reserve price designed to encourage bidders and secure a quick sale, went for \$450,000; that's a whopping 55% discount.

It's also important to be realistic though and not stretch yourself too far financially. Janet says the biggest mistake you can make is to borrow too much or over-borrow. For first-time investors, lenders usually demand bigger down payments because you haven't got a proven track record. That's more of your money on the table and, therefore, should anything go wrong, you're in for a big financial hit.

Her business partner, James Nylles, is in complete agreement on this point. He also highlights the fact that mortgage payments and deposits are only part of the long-term cost of buying a rental property. There is also the cost of repairs, administration and maintenance, rental manager's fees, insurance and so on, all of which require you to hold a significant amount of money in reserve. Failure to factor this in when calculating how much you can afford to part with in mortgage repayments can lead to disaster.

One of the biggest traps for first-time investors, according to Nylles, is the temptation to pay over the odds to get the property you desire. Buyers often get carried away, especially in the auction-room setting, which can get quite competitive and even descend into a racket of one-upmanship.

They end up paying top-dollar and landing themselves in a financial situation they can ill afford to be in. Remember, you are in the property game to make money, so the more money you have to pay upfront for a property, the less likely you are to recoup your investment in the long run.

The good news, however, is that the housing market is not very hot at the moment, which means the danger of overpaying is not so great. Always set emotions to one side and think from a purely business perspective. The question of your liking or disliking the property is irrelevant.

As Nylles points out: "you will not be living there." Business decisions are made in the cold hard light of day; your objective is to minimise your outlay and maximise your return. Whether you secure a huge home in pristine condition or a tiny flat with bare room to stretch in is irrelevant – if the tiny flat gets you a better return on your investment then the choice is a no brainer. And last of all, do your homework. You've got to get to know the location in which you are going to invest. Look out for areas which are earmarked for government investment. Urban renewal areas are often very attractive since house and rental prices in such places are low right now but can be expected to rise in the not too distant future. The range of local amenities, safety and the state of the local economy are all important factors to consider, too. As the old saying goes, 'location, location, location'. Invest in a good location and you will maximise your rental income.

Answer questions below using NO MORE THAN THREE WORDS for each answer of questions 1-7.

1. What are investors getting fed up with?
2. Janet Anderson is involved in the sale of the property. What is another phrase used in paragraph 1 to describe this type of business?
3. What is one of the best ways to identify a bargain in the property market?
4. Failure to meet your what, can cause your home to be repossessed?
5. What do banks want to get back quickly on foreclosed properties?
6. Developing networks is an excellent way to find what?
7. What is the biggest error of judgement first-time investors can make, according to Anderson?

Do the following statements agree with the information given in Reading Passage 3? In boxes 8–14 on your answer sheet, write

- **YES** – if the statement agrees with the information
- **NO** – if the statement contradicts the information
- **NOT GIVEN** – if there is no information on this

8. Banks demand larger deposits from first-time property investors.

9. By making a larger deposit, investors can limit their personal financial risk.

10. There are a lot of long-term costs to take into consideration before purchasing a rental property.

11. Banks require you to hold a lot of money in the reserve to meet your long-term property maintenance costs.

12. Many investors are tempted to pay more than they should for their investment properties.

13. At the moment, house prices are extremely high in general.

14. There are a lot of urban renewal projects that have been earmarked by the government.

Reading Passage 2

Instructions to follow

You should spend 20 minutes on Questions 15–27 which are based on Reading Passage 2.

Cutty star

The nineteenth century was a period of great technological development in Britain, and for shipping the major changes were from wind to steam power, and from wood to iron and steel.

The fastest commercial sailing vessels of all time were clippers, three-masted ships built to transport goods around the world, although some also took passengers. From the 1840s until 1869, when the Suez Canal opened and steam propulsion was replacing sail, clippers dominated world trade. Although many were built, only one has survived more or less intact: Cutty Sark, now on display in Greenwich, southeast London.

Cutty Sark's unusual name comes from the poem Tam O'Shanter by the Scottish poet Robert Burns. Tam, a farmer, is chased by a witch called Nannie, who is wearing a 'cutty sark' – an old Scottish name for a short nightdress. The witch is depicted in Cutty Sark's figurehead – the carving of a woman typically at the front of old sailing ships. In legend, and in Burns's poem, witches cannot cross water, so this was a rather strange choice of name for a ship.

Cutty Sark was built in Dumbarton, Scotland, in 1869, for a shipping company owned by John Willis. To carry out construction, Willis chose a new shipbuilding firm, Scott & Linton, and ensured that the contrast with them put him in a very strong position. In the end, the firm was forced out of business, and the ship was finished by a competitor.

Willis's company was active in the tea trade between China and Britain, where speed could bring shipowners both profits and prestige, so Cutty Sark was designed to make the journey more quickly than any other ship. On her maiden voyage, in 1870, she set sail from London, carrying large amounts of goods to China. She returned laden with tea, making the journey back to London in four months. However, Cutty Sark never lived up to the high expectations of her owner, as a result of bad winds and various misfortunes. On one occasion, in 1872, the ship and a rival clipper, Thermopylae, left port in China on the same day. Crossing the Indian Ocean, Cutty Sark gained a lead of over 400 miles, but then her rudder was severely damaged in stormy seas, making her impossible to steer. The ship's crew had the daunting task of repairing the rudder at sea, and only succeeded at the second attempt. Cutty Sark reached London a week after Thermopylae.

Steam ships posed a growing threat to clippers, as their speed and cargo capacity increased. In addition, the opening of the Suez Canal in 1869, the same year that Cutty Sark was launched, had a serious impact. While steam ships could make use of the quick, direct route between the Mediterranean and the Red Sea, the canal was of no use to sailing ships, which needed the much stronger winds of the oceans, and so had to sail a far greater distance. Steam ships reduced the journey time between Britain and China by approximately two months.

By 1878, tea traders weren't interested in Cutty Sark, and instead, she took on the much less prestigious work of carrying any cargo between any two ports in the world. In 1880, violence aboard the ship led ultimately to the replacement of the captain with an incompetent drunkard who stole the crew's wages. He was suspended from service, and a new captain appointed. This marked a turnaround and the beginning of the most successful period in Cutty Sark's working life, transporting wool from Australia to Britain. One such journey took just under 12 weeks, beating every other ship sailing that year by around a month.

The ship's next captain, Richard Woodget, was an excellent navigator, who got the best out of both his ship and his crew. As a sailing ship, Cutty Sark depended on the strong trade winds of the southern hemisphere, and Woodget took her further south than any previous captain, bringing her dangerously close to icebergs off the southern tip of South America. His gamble paid off, though, and the ship was the fastest vessel in the wool trade for ten years.

As competition from steam ships increased in the 1890s, and Cutty Sark approached the end of her life expectancy, she became less profitable. She was sold to a Portuguese firm, which renamed her Ferreira. For the next 25 years, she again carried miscellaneous cargoes around the world.

Badly damaged in a gale in 1922, she was put into Falmouth harbor in southwest England, for repairs. Wilfred Dowman, a retired sea captain who owned a training vessel, recognised her and tried to buy her, but without success. She returned to Portugal and was sold to another Portuguese company. Dowman was determined, however, and offered a high price: this was accepted, and the ship returned to Falmouth the following year and had her original name restored.

Dowman used Cutty Sark as a training ship, and she continued in this role after his death. When she was no longer required, in 1954, she was transferred to dry dock at Greenwich to go on public display. The ship suffered from fire in 2007, and again, less seriously, in 2014, but now Cutty Sark attracts a quarter of a million visitors a year.

Do the following statements agree with the information given in Reading Passage 1? In boxes 15–22 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

- 15.** Clippers were originally intended to be used as passenger ships.
- 16.** Cutty Sark was given the name of a character in a poem.
- 17.** The contract between John Willis and Scott & Linton favoured Willis.
- 18.** John Willis wanted Cutty Sark to be the fastest tea clipper travelling between the UK and China.
- 19.** Despite storm damage, Cutty Sark beat Thermopylae back to London.
- 20.** The opening of the Suez Canal meant that steam ships could travel between Britain and China faster than clippers.
- 21.** Steam ships sometimes used the ocean route to travel between London and China.
- 22.** Captain Woodget put Cutty Sark at risk of hitting an iceberg.

Complete the sentences below.

Choose ONE WORD ONLY from the passage for each answer. Write your answers in boxes 23–27 on your answer sheet.

23 After 1880, Cutty Sark carried _____ as its main cargo during its most successful time. **24** As a captain and _____, Woodget was very skilled. **25** Ferreira went to Falmouth to repair damage that a _____ had caused. **26** Between 1923 and 1954, Cutty Sark was used for _____. **27** Cutty Sark has twice been damaged by _____ in the 21st century.

Student Space:

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Reading Passage 3

Instructions to follow

You should spend 20 minutes on Questions 28–41 which are based on Reading Passage 3.

Honey Bees in Trouble **Can native pollinators fill the gap?**

A. Recently, ominous headlines have described a mysterious ailment, colony collapse disorder (CCD), that is wiping out the honeybees that pollinate many crops. Without honeybees, the story goes, fields will be sterile, economies will collapse, and food will be scarce.

B. But what few accounts acknowledge is that what's at risk is not itself a natural state of affairs. For one thing, in the United States, where CCD was first reported and has had its greatest impacts, honeybees are not a native species. Pollination in modern agriculture isn't alchemy, it's industry. The total number of hives involved in the U.S. pollination industry has been somewhere between 2.5 million and 3 million in recent years. Meanwhile, American farmers began using large quantities of organophosphate insecticides, planted large-scale crop monocultures, and adopted "clean farming" practices that scrubbed native vegetation from field margins and roadsides. These practices killed many native bees outright—they're as vulnerable to insecticides as any agricultural pest—and made the agricultural landscape inhospitable to those that remained. Concern about these practices and their effects on pollinators isn't new—in her 1962 ecological alarm cry *Silent Spring*, Rachel Carson warned of a 'Fruitless Fall' that could result from the disappearance of insect pollinators.

C. If that 'Fruitless Fall' has not—yet—occurred, it may be largely thanks to the honeybee, which farmers turned to as the ability of wild pollinators to service

crops declined. The honeybee has been semi-domesticated since the time of the ancient Egyptians, but it wasn't just familiarity that determined this choice: the bees' biology is in many ways suited to the kind of agricultural system that was emerging. For example, honeybee hives can be closed up and moved out of the way when pesticides are applied to a field. The bees are generalist pollinators, so they can be used to pollinate many different crops. And although they are not the most efficient pollinator of every crop, honeybees have strength in numbers, with 20,000 to 100,000 bees living in a single hive. "Without a doubt, if there was one bee you wanted for agriculture, it would be the honeybee," says Jim Cane, of the U.S. Department of Agriculture. The honeybee, in other words, has become a crucial cog in the modern system of industrial agriculture. That system delivers more food, and more kinds of it, to more places, more cheaply than ever before. But that system is also vulnerable, because making a farm field into the photosynthetic equivalent of a factory floor, and pollination into a series of continent-long assembly lines, also leaches out some of the resilience characteristic of natural ecosystems.

D. Breno Freitas, an agronomist, pointed out that in nature such a high degree of specialization usually is a very dangerous game: it works well while all the rest is in equilibrium, but runs quickly to extinction at the least disbalance. In effect, by developing an agricultural system that is heavily reliant on a single pollinator species, we humans have become riskily overspecialized. And when the human-honeybee relationship is disrupted, as it has been by colony collapse disorder, the vulnerability of that agricultural system begins to become clear.

E. In fact, a few wild bees are already being successfully managed for crop pollination. "The problem is trying to provide native bees in adequate numbers on a reliable basis in a fairly short number of years in order to service the crop , " Jim Cane says. "You're talking millions of flowers per acre in a two-to three-week time frame, or less, for a lot of crops." On the other hand, native bees can be much more efficient pollinators of certain crops than honeybees, so you don't need as many to do the job. For example, about 750 blue orchard bees (*Osmia lignaria*) can pollinate a hectare of apples or almonds, a task that would require roughly 50,000 to 150,000 honeybees. There are bee tinkerers engaged in similar work in many comers of the world. In Brazil, Breno Freitas has found that *Centris tarsata*, the native pollinator of wild cashew, can survive in commercial cashew orchards if growers provide a source of floral oils, such as by interplanting their cashew trees with Caribbean cherry.

F. In certain places, native bees may already be doing more than they're getting credit for. Ecologist Rachael Winfree recently led a team that looked at pollination of four summer crops (tomato, watermelon, peppers, and muskmelon) at 29 farms in the region of New Jersey and Pennsylvania. Winfiree's team identified 54 species of wild bees that visited these crops, and found that wild bees were the most important pollinators in the system: even though managed honeybees were present on many of the farms, wild bees were responsible for 62 percent of flower visits in the study. In another study focusing specifically on watermelon, Winfree and her colleagues calculated that native bees alone could provide sufficient pollination at 90 percent of the 23 farms studied. By contrast, honeybees alone could provide sufficient pollination at only 78 percent of farms. ieltsxpress

G. “The region I work in is not typical of the way most food is produced,” Winfree admits. In the Delaware Valley, most farms and farm fields are relatively small, each farmer typically grows a variety of crops, and farms are interspersed with suburbs and other types of land use which means there are opportunities for homeowners to get involved in bee conservation, too. The landscape is a bee-friendly patchwork that provides a variety of nesting habitat and floral resources distributed among different kinds of crops, weedy field margins, fallow fields, suburban neighborhoods, and semi natural habitat like old woodlots, all at a relatively small scale. In other words, “pollinator-friendly” farming practices would not only aid pollination of agricultural crops, but also serve as a key element in the overall conservation strategy for wild pollinators, and often aid other wild species as well.

H. Of course, not all farmers will be able to implement all of these practices. And researchers are suggesting a shift to a kind of polyglot agricultural system. For some small-scale farms, native bees may indeed be all that’s needed. For larger operations, a suite of managed bees—with honeybees filling the generalist role and other, native bees pollinating specific crops—could be augmented by free pollination services from resurgent wild pollinators. In other words, they’re saying, we still have an opportunity to replace a risky monoculture with something diverse, resilient, and robust.

Do the following statements agree with the claims of the writer in Reading Passage? In boxes 28–31 on your answer sheet, write

- **YES** – if the statement agrees with the information
- **NO** – if the statement contradicts the information
- **NOT GIVEN** – if there is no information on this

28. In the United States, farmers use honeybees in a large scale over the past few years

29. Cleaning farming practices would be harmful to farmers'

30. The blue orchard bee is the most efficient pollinator among native bees for every crop

31. It is beneficial to other local creatures to protect native bees

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

Write your answers in boxes 32–36 on your answer sheet.

32. The example of the 'Fruitless Fair' underlines the writer's point about

- A.** needs for using pesticides.
- B.** impacts of losing insect pollinators.
- C.** vulnerabilities of native bees.
- D.** benefits in building more pollination industries.

33. Why can honeybees adapt to the modern agricultural system?

- A.** the honeybees can pollinate more crops efficiently
- B.** The bees are semi-domesticated since ancient times.
- C.** Honeybee hives can be protected away from pesticides.
- D.** The ability of wild pollinators using to serve crops declines.

34. The writer mentions factories and assembly lines to illustrate

- A.** one drawback of the industrialised agricultural system.
- B.** a low cost in modern agriculture.
- C.** the role of honeybees in pollination.
- D.** what a high yield of industrial agriculture.

35. In the 6th paragraph Winfree's experiment proves that

- A.** honeybee can pollinate various crops.
- B.** there are many types of wild bees as the pollinators.
- C.** the wild bees can increase the yield to a higher percentage
- D.** wild bees work more efficiently as a pollinator than honey bees in certain cases

36. What does the writer want to suggest in the last paragraph?

- A.** the importance of honey bees in pollination
- B.** adoption of different bees in various sizes of agricultural system
- C.** the comparison between the intensive and the rarefied agricultural system
- D.** the reason why farmers can rely on native pollinators

Complete each sentence with the correct ending, A-F, below.
Write the correct letter, A-F, in boxes 37-40 on your answer sheet

37. Headline of colony collapse disorder states that

38. Viewpoints of Freitas manifest that

39. Examples of blue orchard bees have shown that

40. *Centris tarsata* is mentioned to exemplify that

A. native pollinators can survive when a specific plant is supplied.

B. it would cause severe consequences both to commerce and agriculture.

C. honey bees cannot be bred.

D. some agricultural landscapes are favorable in supporting wild bees.

E. a large scale of honey bees are needed to pollinate.

F. an agricultural system is fragile when relying on a single pollinator

Student Space:

Practice Test 11

Reading Passage 1

Instructions to follow

You should spend 20 minutes on Questions 1–13 which are based on Reading Passage 1.

Development of Adolescence

A. The American Academy of Pediatrics recognizes three stages of adolescence. These are early, middle and late adolescence, and each has its own developmental tasks. Teenagers move through these tasks at their own speed depending on their physical development and hormone levels. Although these stages are common to all teenagers, each child will go through them in his or her own highly individual ways.

B. During the early years young people make the first attempts to leave the dependent, secure role of a child and to establish themselves as unique individuals, independent of their parents. Early adolescence is marked by rapid physical growth and maturation. The focus of adolescents' self-concepts is thus often on their physical self and their evaluation of their physical acceptability. Early adolescence is also a period of intense conformity to peers. 'Getting along,' not being different, and being accepted seem somehow pressing to the early adolescent. The worst possibility, from the view of the early adolescent, is to be seen by peers as 'different'.

C. Middle adolescence is marked by the emergence of new thinking skills. The intellectual world of the young person is suddenly greatly expanded. Their concerns about peers are more directed toward their opposite sexed peers. It is also during this period that the move to establish psychological independence from one's parents accelerates. Delinquency behavior may emerge since parental views are no longer seen as absolutely correct by adolescents. Despite some delinquent behavior, middle adolescence is a period during which young people are oriented toward what is right and proper. They are developing a sense of behavioral maturity and learning to control their impulsiveness.

D. Late adolescence is marked by the final preparations for adult roles. The developmental demands of late adolescence often extend into the period that we think of as young adulthood. Late adolescents attempt to crystallize their vocational goals and to establish a sense of personal identity. Their needs for peer approval are diminished and they are largely psychologically independent from their parents. The shift to adulthood is nearly complete.

E. Some years ago, Professor Robert Havighurst of the University of Chicago proposed that stages in human development can best be thought of in terms of the developmental tasks that are part of the normal transition. He identified eleven developmental tasks associated with the adolescent transition. One developmental task an adolescent needs to achieve is to adjust to a new physical sense of self. At no other time since birth does an individual undergo such rapid and profound physical changes as during early adolescence. Puberty is marked by sudden rapid growth in height and weight. Also, the young person experiences the emergence and accentuation of those physical traits that make him or her a boy or girl. The effect of this rapid change is that a young adolescent often becomes focused on his or her body.

F. Before adolescence, children's thinking is dominated by a need to have a concrete example for any problem that they solve. Their thinking is constrained to what is real and physical. During adolescence, young people begin to recognize and understand abstractions. The adolescent must adjust to increased cognitive demands at school. Adults see high school in part as a place where adolescents prepare for adult roles and responsibilities and in part as preparatory for further education. School curricula are frequently dominated by the inclusion of more abstract, demanding material, regardless of whether the adolescents have achieved formal thought. Since not all adolescents make the intellectual transition at the same rate, demands for abstract thinking prior to achievement of that ability may be frustrating.

G. During adolescence, as teens develop increasingly complex knowledge systems and a sense of self, they also adopt an integrated set of values and morals. During the early stages of moral development, parents provide their child with a structured set of rules of what is right and wrong, what is acceptable and unacceptable. Eventually, the adolescent must assess the parents' values as they come into conflict with values expressed by peers and other segments of society. To reconcile differences, the adolescent restructures those beliefs into a personal ideology.

H. The adolescent must develop expanded verbal skills. As adolescents mature intellectually, as they face increased school demands, and as they prepare for adult roles, they must develop new verbal skills to accommodate more complex concepts and tasks. Their limited language of childhood is no longer adequate. Adolescents may appear less competent because of their inability to express themselves meaningfully.

I. The adolescent must establish emotional and psychological independence from his or her parents. Childhood is marked by a strong dependence on one's parents. Adolescents may yearn to keep that safe, secure, supportive, dependent relationship. Yet, to be an adult implies a sense of independence, of autonomy, of being one's own person. Adolescents may vacillate between their desire for dependence and their need to be independent. In an attempt to assert their need for independence and individuality, adolescents may respond with what appears to be hostility and lack of cooperation.

J. Adolescents do not progress through these multiple developmental tasks separately. At any given time, adolescents may be dealing with several. Further, the centrality of specific developmental tasks varies with early, middle, and late periods of the transition.

Instructions to follow

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

Match the following characteristics with the correct stages of the adolescent.

- A. early adolescence
- B. middle adolescence
- C. later adolescence

1. interested in the opposite sex
2. exposure to danger
3. the same as others
4. beginning to form individual thinking without family context
5. less need the approval of friends
6. intellectual booming

Instructions to follow

- Complete each sentence with the correct ending, A-F, below.
- Write the correct letters, A-F, in boxes 7-10 on your answer sheet.

7. One of Havighurst's research
8. High School Courses
9. Adolescence is a time when young people
10. The developmental speed of thinking patterns

List of the statements

- A. form personal identity with a set of morals and values
- B. develops a stable and productive peer relationships
- C. are designed to be more challenging than some can accept
- D. varies from people to people
- E. focuses on creating a self-image
- F. become an extension of their parents

Student Space:

Instructions to follow

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

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

11. The adolescent lacks the ability to think abstractly.

12. Adolescents may have a deficit in their language ability.

13. The adolescent experiences a transition from reliance on his parents to independence.

Student Space:



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Reading Passage 2

Instructions to follow

You should spend 20 minutes on Questions 14–26 which are based on Reading Passage 2.

Intelligence and Giftedness

A. In 1904 the French minister of education, facing limited resources for schooling, sought a way to separate the unable from the merely lazy. Alfred Binet got the job of devising selection principles and his brilliant solution put a stamp on the study of intelligence and was the forerunner of intelligence tests still used today, he developed a thirty-problem test in 1905, which tapped several abilities related to intellect, such as judgment and reasoning, the test determined a given child's mental age'. The test previously established a norm for children of a given physical age. (for example, a five-year-old on average gets ten items correct), therefore, a child with a mental age of five should score 10, which would mean that he or she was functioning pretty much as others of that age. The child's mental age was then compared to his physical age.

B. A large disparity in the wrong direction (e.g., a child of nine with a mental age of four) might suggest inability rather than laziness and mean he or she was earmarked for special schooling, Binet, however, denied that the test was measuring intelligence, its purpose was simply diagnostic, for selection only. This message was however lost and caused many problems and misunderstanding later.

C. Although Binet's test was popular, it was a bit inconvenient to deal with a variety of physical and mental ages. So in 1912, Wilhelm Stern suggested simplifying this by reducing the two to a single number, he divided the mental age by the physical age and multiplied the result by 100. An average child, irrespective of age, would score 100. A number much lower than 100 would suggest the need for help, and one much higher would suggest a child well ahead of his peers.

D. This measurement is what is now termed the IQ (for intelligence quotient) score and it has evolved to be used to show how a person, adult or child, performed in relation to others. (the term IQ was coined by Lewis M. Terman, professor of psychology and education of Stanford University, in 1916. He had constructed an enormously influential revision of Binet's test, called the Stanford-Binet test, versions of which are still given extensively).

E. The field studying intelligence and developing tests eventually coalesced into a sub-field of psychology called psychometrics (psycho for 'mind' and metrics for 'measurements'). The practical side of psychometrics (the development and use of tests) became widespread quite early, by 1917, when Einstein published his grand theory of relativity, mass-scale testing was already in use. Germany's unrestricted submarine warfare (which led to the sinking of the Lusitania in 1915) provoked the United States to finally enter the First World War in the same year. The military had to build up an army very quickly; it had two million inductees to sort out. Who would become officers and who enlisted men?

Psychometricians developed two intelligence tests that help sort all these people out, at least to some extent, this was the first major use of testing to decide who lived and who died, as officers were a lot safer on the battlefield, the tests themselves were given under horrendously bad conditions, and the examiners seemed to lack commonsense, a lot of recruits simply had no idea what to do and in several sessions most inductees scored zero! The examiners also came up with the quite astounding conclusion from the testing that the average American adult's intelligence was equal to that of a thirteen-year-old!

F. Intelligence testing enforced political and social prejudice, their results were used to argue that Jews ought to be kept out of the united states because they were so intelligently inferior that they would pollute the racial mix, and blacks ought not to be allowed to breed at all. And so abuse and test bias controversies continued to plague psychometrics.

G. Measurement is fundamental to science and technology, science often advances in leaps and bounds when measurement devices improve, psychometrics has long tried to develop ways to gauge psychological qualities such as intelligence and more specific abilities, anxiety, extroversion, emotional stability, compatibility, with a marriage partner, and so on. Their scores are often given enormous weight, a single IQ measurement can take on a life of its own if teachers and parents see it as definitive, it became a major issue in the 70s, when court cases were launched to stop anyone from making important decisions based on IQ test scores, the main criticism was and still is that current tests don't really measure intelligence, whether intelligence can be measured at all is still controversial, some say it cannot others say that IQ tests are psychology's greatest accomplishments.

Instructions to follow

- The Reading Passage has seven paragraphs A–G.
- Which paragraph contains the following information of questions 14–17?

14. IQ is just one single factor of human characteristics.
15. Discussion of the methodology behind Professor Stern's test.
16. Inadequacy of IQ test from Binet.
17. The definition of IQ was created by a professor.

Instructions to follow

- Choose the correct answer A, B, C or D.
- Write your answers in boxes 18–21 on your answer sheet.

18. Professor Binet devises the test to

- A. find those who do not perform satisfied.
- B. choose the best one.
- C. measure the intelligence.
- D. establish the standard of intelligence.

19. The test is designed according to

- A. math.
- B. age.
- C. reading skill.
- D. gender.

20. U.S. Army used Intelligence tests to select.....

- A. Officers.
- B. Normal Soldiers.
- C. Examiners.
- D. Submarine drivers.

21. The purpose of the text is to.....

- A. give credit to the contribution of Binet in IQ test.
- B. prove someone's theory is feasible.
- C. discuss the validity and limitation of the test.
- D. outline the history of the test.

Instructions to follow

Do the following statements agree with the information given in Reading Passage 2? Write for questions 22–26:

- **YES** If the statement is true
- **NO** If the statement is false
- **NOT GIVEN** If the information is not given in the passage

22. Part of the intention in designing the test by professor Binet has been misunderstood.

23. Age as a factor is completely overlooked in the simplified tests by Wilhelm Stern

24. Einstein was a counter-example of the IQ test conclusion.

25. IQ test may probably lead to racial discrimination as a negative effect.

26. The author regards measuring intelligence tests as a goal hardly meaningful.

Reading Passage 3

Instructions to follow

You should spend 20 minutes on Questions 27–40 which are based on Reading Passage 3.

Communicating Styles and Conflict

Knowing your communication style and having a mix of styles on your team can provide a positive force for resolving conflict.

A. As far back as Hippocrates's time (460–370 B.C.), people have tried to understand other people by characterizing them according to personality type or temperament. Hippocrates believed there were four different body fluids that influenced four basic types of temperament. His work was further developed 500 years later by Galen. These days there is any number of self-assessment tools that relate to the basic descriptions developed by Galen, although we no longer believe the source to be the types of body fluid that dominate our systems.

B. The values in self-assessments that help determine personality style. Learning styles, communication styles, conflict-handling styles, or other aspects of individuals is that they help depersonalize conflict in interpersonal relationships. The depersonalization occurs when you realize that others aren't trying to be difficult, but they need different or more information than you do. They're not intending to be rude: they are so focused on the task they forget about greeting people.

They would like to work faster but not at the risk of damaging the relationships needed to get the job done. They understand there is a job to do. But it can only be done right with the appropriate information, which takes time to collect. When used appropriately, understanding communication styles can help resolve conflict on teams. Very rarely are conflicts true personality issues. Usually, they are issues of style, information needs, or focus.

C. Hippocrates and later Galen determined there were four basic temperaments: sanguine, phlegmatic, melancholic and choleric. These descriptions were developed centuries ago and are still somewhat apt, although you could update the wording. In today's world, they translate into the four fairly common communication styles described below:

D. The sanguine person would be the expressive or spirited style of communication. These people speak in pictures. They invest a lot of emotion and energy in their communication and often speak quickly. Putting their whole body into it. They are easily sidetracked onto a story that may or may not illustrate the point they are trying to make. Because of their enthusiasm, they are great team motivators. They are concerned about people and relationships. Their high levels of energy can come on strong at times and

their focus is usually on the bigger picture, which means they sometimes miss the details or the proper order of things. These people find conflict or differences of opinion invigorating and love to engage in a spirited discussion. They love change and are constantly looking for new and exciting adventures.

E. The phlegmatic person – cool and persevering – translates into the technical or systematic communication style. This style of communication is focused on facts and technical details. Phlegmatic people have an orderly methodical way of approaching tasks, and their focus is very much on the task, not on the people, emotions, or concerns that the task may evoke.

The focus is also more on the details necessary to accomplish a task. Sometimes the details overwhelm the big picture and focus needs to be brought back to the context of the task. People with this style think the facts should speak for themselves, and they are not as comfortable with conflict. They need time to adapt to change and need to understand both the logic of it and the steps involved.

F. The melancholic person who is softhearted and oriented toward doing things for others translates into the considerate or sympathetic communication style. A person with this communication style is focused on people and relationships. They are good listeners and do things for other people – sometimes to the detriment of getting things done for themselves.

They want to solicit everyone's opinion and make sure everyone is comfortable with whatever is required to get the job done. At times this focus on others can distract from the task at hand. Because they are so concerned with the needs of others and smoothing over issues, they do not like conflict. They believe that change threatens the status quo and tends to make people feel uneasy, so people with this communication style, like phlegmatic people, need time to consider the changes in order to adapt to them.

G. The choleric temperament translates into the bold or direct style of communication. People with this style are brief in their communication – the fewer words the better. They are big-picture thinkers and love to be involved in many things at once. They are focused on tasks and outcomes and often forget that the people involved in carrying out the tasks have needs. They don't do detail work easily and as a result, can often underestimate how much time it takes to achieve the task. Because they are so direct, they often seem forceful and can be very intimidating to others. They usually would welcome someone challenging them. But most other styles are afraid to do so. They also thrive on change, the more the better.

H. A well-functioning team should have all of these communications styles for true effectiveness. All teams need to focus on the task, and they need to take care of relationships in order to achieve those tasks. They need the big picture perspective or the context of their work, and they need the details to be identified and taken care of for success. We all have aspects of each style within us. Some of us can easily move from one style to another and adapt our style to the needs of the situation at hand—whether the focus is on tasks or relationships. For others, a dominant style is very evident, and it is more challenging to see the situation from the perspective of another style.

The work environment can influence communication styles either by the type of work that is required or by the predominance of one style reflected in that environment. Some people use one style at work and another at home. The good news about communication styles is that we have the ability to develop flexibility in our styles. The greater the flexibility we have, the more skilled we usually are at handling possible and actual conflicts. Usually, it has to be relevant to us to do so, either because we think it is important or because there are incentives in our environment to encourage it. The key is that we have to want to become flexible with our communication style. As Henry Ford said, “Whether you think you can or you can’t, you’re right!”

Instructions to follow

- Choose the correct heading for each section from the list of headings below.
- Write the correct number i-x in boxes 27–34 on your answer sheet.

List of Headings

- I. Different personality types mentioned
- II. recommendation of combined styles for group
- III. Historical explanation of understanding personality
- IV. A lively and positive attitude person depicted
- V. A personality likes a challenge and direct communication different characters illustrated
- VI. Functions of understanding communication styles
- VII. Cautious and considerable person cited
- VIII. Calm and Factual personality illustrated
- IX. Self-assessment determines one's temperament

27. Paragraph A
28. Paragraph B
29. Paragraph C
30. Paragraph D
31. Paragraph E

32. Paragraph F
33. Paragraph G
34. Paragraph H

Instructions to follow

Do the following statements agree with the information given in Reading Passage 3? In boxes 35–39 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

35. It is believed that sanguine people do not like variety

36. Melancholic and phlegmatic people have similar characteristics

37. It is the sanguine personality that is needed most in the workplace.

38. It is possible for someone to change a type of personality.

39. Work surroundings can affect which communication style is the most effective.

Instructions to follow

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

40. The author thinks self-assessment tools can be able to

- A.** assist to develop one's personality in a certain scenario.
- B.** help to understand colleagues and resolve problems.
- C.** improve the relationship with the boss of the company.
- D.** change others behavior and personality.

Practice Test 12

Reading Passage 1

Instructions to follow

You should spend 20 minutes on Questions 1–13 which are based on Reading Passage 1.

The Spice of Life!

A. When thinking of the most popular restaurant dish in the UK, the answer 'chicken tikka masala' does not spring readily to mind. But it is indeed the answer, often now referred to as a true 'British national dish'. It may even have been invented by Indian immigrants in Scotland, who roasted chicken chunks (tikka), mixed them with spices and yoghurt, and served this in a bowl of masala sauce. The exact ingredients of the sauce vary from restaurant to restaurant, but the dish usually includes purced tomatoes and cream, coloured orange by turmeric and paprika. British cuisine? Yes, spices have come a long way.

B. Spices are dried seeds, fruit, roots, bark, or vegetative parts of plants, added to food in small amounts to enhance flavour or colour. Herbs, in contrast, are only from the leaves, and only used for flavouring. Looking at the sources of some common spices, mustard and black pepper are from seeds, cinnamon from bark, cloves from dried flower buds, ginger and turmeric from roots, while mace and saffron are from seed covers and stigma tips, respectively. In the face of such variety, it is becoming increasingly common for spices to be offered in pre-made combinations. Chili powder is a blend of chili peppers with other spices, often cumin, oregano, garlic powder, and salt. Mixed spice, which is often used in baking, is a British blend of sweet spices, with cinnamon being the dominant flavour. The ever-popular masala, as noted, could be anything, depending on the chef.

C. Although human communities were using spices tens of thousands of years ago, the trade of this commodity only began about 2000 BC, around the Middle East. Early uses were less connected with cooking, and more with such diverse functions as embalming, medicine, religion, and food preservation. Eventually, extensive overland trade routes, such as the Silk Road, were established, yet it was maritime advances into India and East Asia which led to the most dramatic growth in commercial activities. From then on, spices were the driving force of the world economy, commanding such high prices that it pitted nation against nation, and became the major impetus to exploration and conquest. It would be hard to underestimate the role spices have played in human history.

D. Originally, Muslim traders dominated these routes, seeing spice-laden ships from the Orient crossing the Indian Ocean to Red Sea and Persian Gulf ports, from where camel caravans transported the goods overland. However, although slow to develop, European nations, using aggressive exploration and colonisation strategies, eventually came to rule the Far East and, consequently, control of the spice trade. At first, Portugal was the dominant power, but the British and Dutch eventually gained the upper hand, so that by the 19th century, the British controlled India, while the Dutch had the greater portion of the East Indies (Indonesia). Cloves, nutmeg, and pepper were some of the most valuable spices of the time.

E. But why were spices always in such demand? There are many answers. In the early days, they were thought to have strong medicinal properties by balancing 'humours', or excesses of emotions in the blood. Other times they were thought to prevent maladies such as the plague, which often saw prices of recommended spices soar. But most obviously, spices flavoured the bland meat-based European cuisines.

Pepper, historically, has always been in highest demand for this reason, and even today, peppercorns (dried black pepper kernels) remain, by monetary value, the most widely traded spice in the world. However, saffron, by being produced within the small saffron flower, has always been among the world's most costly spice by weight, valued mostly for its vivid colour.

F. Predictably, the majority of the world's spices are produced in India, although specific spices are often produced in greater amounts in other countries. Vietnam is the largest producer and exporter of pepper, meeting nearly one third of the world's demand. Indonesia holds a clear lead in nutmeg production, Iran in saffron, and Sri Lanka in cinnamon. However, exportation of such spices is not always simple. Most are dried as a whole product, or dried and ground into powder, both forms allowing bulk purchase, easier storage and shipping, and a longer shelf life. For example, the rhizomes (underground stems) of turmeric are boiled for several hours, then dried in ovens, after which they are ground into the yellow powder popular in South-Asian and Middle-Eastern cuisines.

G. However, there are disadvantages in grinding spices. It increases their surface area many fold, accelerating the rate of evaporation and oxidation of their flavour-bearing and aromatic compounds. In contrast, whole dried spices retain these for much longer. Thus, seed-based varieties (which can be packaged and stored well) are often purchased in this form. This allows grinding to be done at the moment of cooking or eating, maximising the flavour and effect, a fact which often results in pepper 'grinders', instead of 'shakers', gracing the tables of the better restaurants around the world.

Reading Passage One has seven paragraphs, A-G. Choose the correct heading for Paragraphs B-G from the list of headings.

List of Headings

- i. Uses of spice
- ii. Spices for cooking
- iii. Changing leaders
- iv. A strange choice
- v. Preserving flavours
- vi. Famous spice routes
- vii. The power of spice
- viii. Some spices
- ix. Medicinal spices
- x. Spice providers

Example: Answer Paragraph A iv

- 1. Paragraph B
- 2. Paragraph C
- 3. Paragraph D
- 4. Paragraph E
- 5. Paragraph F
- 6. Paragraph G

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

Saffron, from the small (7).....of flowers, has a (8).....and is mostly grown in (9).....

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

TRUE if the statement agrees with the information

FALSE if the statement contradicts the information

NOT GIVEN if there is no information on this

- 10.** The ingredients of masala are fairly standardised.
- 11.** The demand for spices led to greater exploration.
- 12.** Vietnam consumes a lot of pepper.
- 13.** Seed-based spices can be easily stored.

Reading Passage 2

Unsung and Lowly Creatures

Earthworms are not creatures likely to attract much attention. Socratic, silent, slow-moving, and featureless, almost no one would ever think. Let's quote Charles Darwin, who wrote: 'It may be doubted whether there are many other animals which have played so important a part in the history of the world as have these lowly-organised creatures'.

That is high praise indeed for what is basically a slimy, muscular, moist, segmented tube. This tube is also hermaphroditic, meaning that there are both male and female segments in the one creature. Some segment contain testes, others eggs, released ooze, exchange, and store fluids, and then a long complicated process eventually leads to the secretion of an egg case. From this, small but fully-formed worms will emerge, reaching full size in about one year, and living for one or two years after that.

Yet earthworms are rarely seen, spending as they do their whole lives underground. Only after heavy rains can they sometimes be found on the surface, apparently stranded. Three hypotheses are put forward to explain this. The stormwater may flood their burrows, forcing them upwards. Alternatively, the worms may be taking advantage of the wet conditions to either travel more quickly through the open air (compared to burrowing beneath the ground), or otherwise to meet and mate. Whatever the case, if they find themselves on concreted, rocky, or hardened earth, they are effectively trapped. If this is during dawn, in high summer, or in the daytime, these earthworms quickly die due to bird predation or dehydration.

Normally, however, worms quietly go about their hidden business, and this often leads to an underestimation of their actual numbers. Darwin himself thought that arable land contained about 50,000 worms per acre, yet modern research has suggested that the figure could reach as high as almost two million. Putting this another way, the weight of earthworms beneath the soil is often greater than that of the cows, horses, and sheep grazing upon its surface. And those worms are just as hungry. Worms do, in fact, have a small mouth and a simple but effective digestive system, similar to the animals above. Food is sucked into the body, then pushed along the length of the worm through muscular action, passing through the crop, gizzard, intestine, and finally the anus.

Perhaps surprisingly, it is this constant eating which so benefits the chemistry of the soil. Earthworms feed on undecayed leaf litter and organic matter. They pull pieces down into their burrows, shred them into smaller parts, and then consume each of these, along with small soil particles. In the worms' gut, everything is ground into a fine paste, to be eventually excreted, releasing essential minerals in an easily accessible form. One single worm may produce over four kilograms of this digested paste per year. Multiply that by a million worms, and one can understand Darwin's comment about 'unsung creatures which, in their untold millions, transformed the land'.

The other great benefit relates to earthworms' search for food. It might surprise many to know that these creatures are very mobile, moving to the surface then down into the safer depths on a daily basis. Aided by the secretion of lubricating mucus, they push themselves through the soil using waves of bodily contractions, which alternately shorten and lengthen their form. The point is, water can also move through their tunnels.

More importantly, as the worms travel, they push air in and out of the soil on a continuous basis. In the same way that animals need oxygen, so too do the myriad micro-organisms in the soil. Thus, without worms, the ground would become waterlogged, airless, and less productive for farming purposes.

Naturally, with so many worms in the soil, they form the base of many food chains. Not only birds, but also some mammals, such as hedgehogs, moles, and even larger ones, such as foxes and bears, will actively dig into the ground of worms. Such predation is natural, and has little effect on worm populations. However, the use of certain fertilisers is a different case. Earthworms depend on the temperature, texture, and moisture content of the soil, but it is its acidity to which they are most sensitive. Nitrogenous fertilisers can raise this to levels fatal to these creatures, often causing disastrous drops in numbers. The more ecologically-aware farmer avoids such chemicals, and regularly adds a surface mulch of organic matter raising worm numbers for the natural benefit of both soil and man.

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

14. Charles Darwin thought that worms

- A.** were only moderately important.
- B.** were organised.
- C.** liked arable land.
- D.** numbered in the many millions.

15. A single worm

- A.** is either male or female.
- B.** has many segments.
- C.** is a complicated organism.
- D.** lives for about a year.

16. Stormwater may possibly

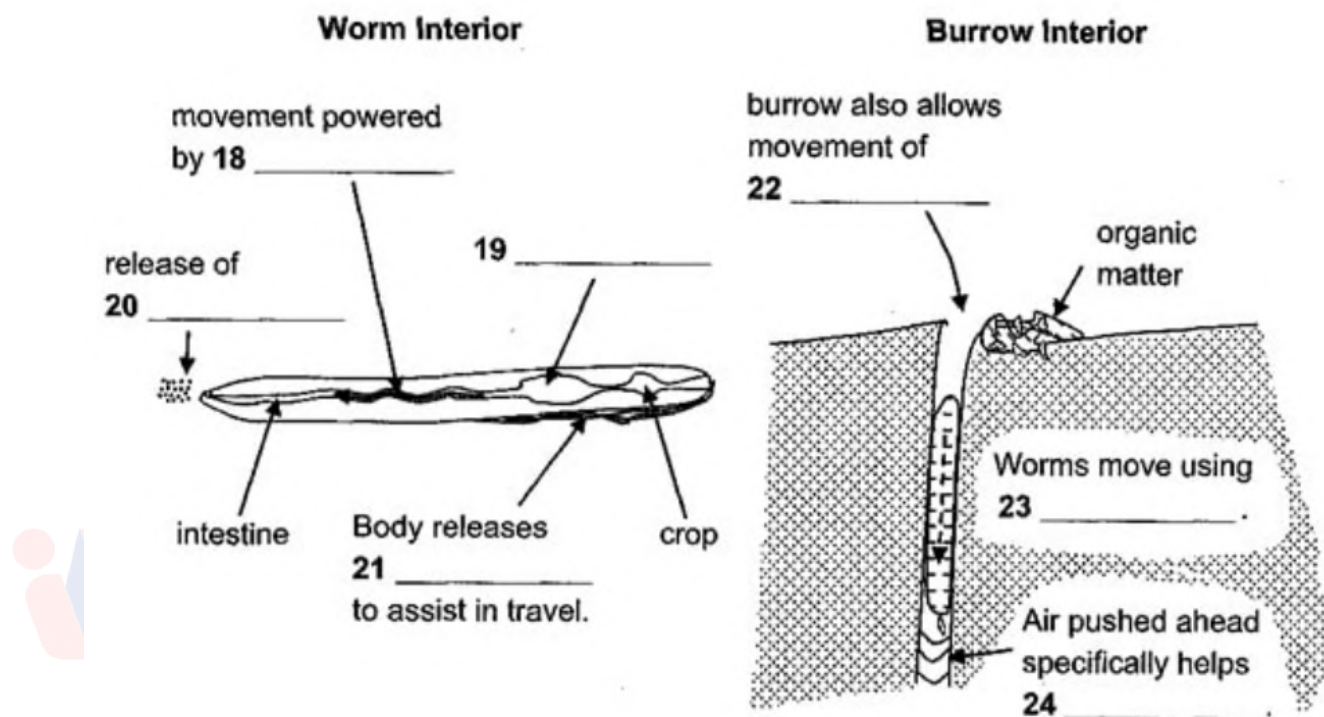
- A.** clean out worm burrows.
- B.** slow down worms.
- C.** help worms encounter others.
- D.** harden the earth.

17. Grazing animals

- A.** often weigh less than the worms below.
- B.** are hungrier than the worms below.
- C.** have very different digestive systems from worms.
- D.** have simpler digestive systems than worms.

Student Space:

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



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

Worm numbers will especially fall when the soil has high (25).....

Adding mulch to the soil shows (26).....

Reading Passage 3

Organisational Conflict and Change

Change is a natural process. As humans, we are born, we grow, we mature, we decline, and we eventually die. On a bigger scale, modern existence is similarly in a constant state of flux, with global change, life strategic change, and personal change constantly upon us. With the current rate of technological advance, this is only happening at a faster pace. Putting it simply, life is change, and in a manner never before experienced.

Organisations, also, are analogous to organisms. They similarly grow, mature, suffer injury and crises, and may well die (for example, become bankrupt). The implications of this new 'change paradigm' are that the stable structures and static systems which in the past made organisations strong, now only contribute to their decline. Textbooks cite many examples of this: large monolithic institutions that failed to respond to external circumstances. Many were former government monopolies, and their break-up into smaller divisions was one attempt to deal with this issue. The message was clear: respond to change, or fail to thrive.

However, the big problem is that change promotes resistance among people. It brings a degree of discomfort, which in turns results in conflict. Thus, since change is constant, so too must be this conflict, and it is this which must be considered. The word 'conflict' has negative connotations, and deservedly so. It is often the result of negative forces, producing negative results. Resources are diverted, judgements distorted, co-ordination reduced, and ill-feeling generated. It thus seems strange to argue that conflict is not necessarily unwelcome, and can, in fact, be necessary, yet that is exactly what I propose.

To understand this, we must first accept one crucial fact: in this new era of increasing change and complexity, accurate and considered decision-making is critical, and can no longer be considered the province of just one person.

There is simply too much information to be processed, and too much knowledge needed, to be within the capability of single individuals. As a result, decision making in modern organisations is now based on group discussions, meetings, and presentations, all to allow the exchange of a variety of perspectives from appropriately qualified people.

The next fact that we must accept is that such gatherings are often affected by 'groupthink'. This is when tightly-knit cohorts of workers uncritically accept the feelings of the group (rather than 'lighting it out'). Individual dissent is squashed, leaving decision-making not as a product of a pool of thinking individuals, all with valuable insights, but merely a collective desire to promote harmony. Clearly, this is not a method likely to optimise the chances of making the best decision.

So, two facts, which when brought together lead to the interesting conclusion: that some degree of conflict is necessary in order to produce better decision-making and, ultimately, higher organisational performance. Extending this further, somewhat paradoxically, very low levels or an absence of conflict may actually be worrying, indicating a lack of staff involvement or interest, or that problems are being hidden, new ideas stifled, and morale low. The focus thus shifts to conflict management (reducing conflict or creating it, as deemed optimum for the organisation), not conflict removal.

So, this is the contradiction. Change must happen, causing significant resistance and conflict, some of which is constructive and necessary, but some of which impedes progress. These feelings can originate from even the most level-headed, open-minded, and rational of people; thus, the next issue is how change agents can deal with it. One essential strategy is to listen to all those involved, even the angriest, most strident and difficult (since, after all, they may be right). Another strategy is to concur with what is factually accurate. People find it difficult to argue with those who agree with them, and this means resistance is reduced, communication enhanced, and insights into the situation will certainly come.

The third strategy for change agents is to always remind themselves of two basic facts. The first is not to expect complete rationality from those around them at all times. Expecting such ideal behaviour is itself irrational, and by resigning oneself to the inevitability of human failings, conflict can become more manageable. The other basic fact is that human beliefs are not necessarily encapsulations of the truth. Instead, they are often constructions of the mind, serving to maximise the security of the self. Thus, when encountering difficulties in implementing change, there is a good chance that the stakeholders are merely protecting such beliefs, and this should also be taken into account.

The experienced change agent realises that everyone's perspective needs to be examined with an open mind. Conflicting viewpoints should be promoted in a healthy way, where people are disarmed and not reacting as a result of ill-feeling or malice. Yet, when such emotions emerge, the important point is to understand that it is not unnatural, and by understanding where it comes from and how to handle it, one can follow- constructive, rather than destructive, paths. It is not easy, but it is certainly possible.

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

27. Organisations

- A.** should be broken into divisions.
- B.** need stable structures.
- C.** are similar to living things.
- D.** must be responsible.

28. Conflict

- A.** is sometimes welcome.
- B.** is usually good.
- C.** should be removed.
- D.** comes and goes.

29. Groupthink can

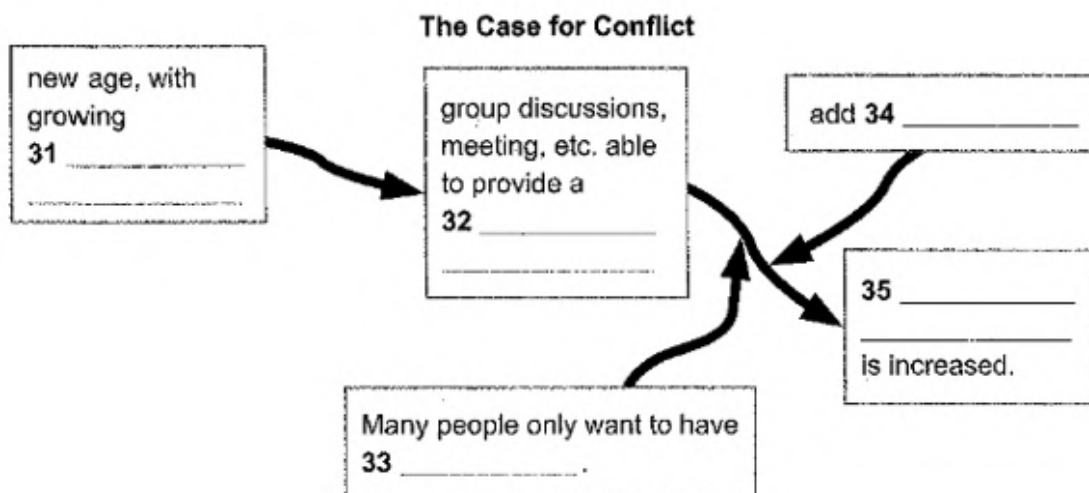
- A.** be better than fighting.
- B.** produce valuable insights.
- C.** lead to wrong decisions.
- D.** optimise chances.

30. Very little conflict is often

- A.** better for organisations.
- B.** good for morale.
- C.** constructive.
- D.** a warning sign.

Student Space:

Complete the flow chart. Choose NO MORE THAN THREE WORDS from the passage for each answer.



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

36. What can even rational people still produce?
37. What sort of information should a change agent agree with?
38. What quality does not constantly come from people?
39. People often lie to enhance what feeling?
40. What emotions can produce unhealthy conflict?

Answer Key

Practice Test 1

Section 1		Section 2		Section 3	
Question	Answer	Question	Answer	Question	Answer
1	J	14	Mis identified	27	viii
2	D	15	Emotions	28	ii
3	E	16	Cultural background	29	X
4	B	17	isolated	30	i
5	E	18	exposed	31	xi
6	Francis Gilton	19	C	32	vi
7	1924	20	A	33	A
8	A	21	D	34	D
9	E	22	H	35	B
10	F	23	D	36	C
11	A	24	B	37	G
12	B	25	B	38	F
13	D	26	D	39	True

	40	Not given
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Practice Test 2

Section 1		Section 2		Section 3	
Question	Answer	Question	Answer	Question	Answer
1	Yes	14	B	27	centrifuge
2	No	15	D	28	C
3	No	16	D	29	A
4	Yes	17	A	30	D
5	Not Given	18	D	31	C
6	F	19	true	32	A
7	G	20	true	33	E
8	C	21	Not given	34	D
9	A	22	Clay loam soil	35	C
10	B	23	pests	36	A
11	D	24	Good economic yield	37	A
12	A	25	paste	38	Focus

13	C	26	Hydraulic press	39	Friendship
				40	Society

Practice Test 3

Section 1		Section 2		Section 3	
Question	Answer	Question	Answer	Question	Answer
1	Candle wax	14	false	27	D
2	synthetic	15	Not given	28	Latin
3	chemistry	16	true	29	doctors
4	Novalak	17	false	30	Technical vocabulary
5	fillers	18	true	31	Grammatical resources
6	hexa	19	Not given	32	Royal society
7	raw	20	true	33	german
8	pressure	21	Problem solving	34	Industrial revolution
9	B	22	Temporal lobes	35	Not given

10	C	23	Evaluating information	36	false
11	True	24	C	37	true
12	false	25	A	38	popular
13	false	26	F	39	principia
				40	Local audience

Practice Test 4

Section 1		Section 2		Section 3	
Question	Answer	Question	Answer	Question	Answer
1	True	14	False	27	Vi
2	false	15	false	28	Viii
3	Not given	16	Not given	29	i
4	false	17	true	30	ix
5	appropriate	18	signatures	31	X
6	Significant quality	19	will	32	iv
7	Company engineers	20	preplexing	33	iii

8	Monocultural (farming)	21	anti-startf ordians	34	A, C, D
9	Local customs	22	Socially unaccepta ble	35	A, C, D
10	Riot (followed)	23	Protect (his) identity	36	A, C, D
11	Leaf blight	24	Document ary evidence	37	C
12	Trained horticulturalists	25	A	38	A
13	Synthetic rubber	26	D	39	B
				40	C

Practice Test 5

Section 1		Section 2		Section 3	
Question	Answer	Question	Answer	Question	Answer
1	True	14	C	27	yes
2	true	15	D	28	no
3	false	16	B	29	yes

4	Not given	17	D	30	Not given
5	false	18	A	31	yes
6	Not given	19	F	32	no
7	sail	20	C	33	D
8	narrow	21	D	34	A
9	locomotion	22	C	35	C
10	moisture	23	A	36	A
11	stress	24	Disc	37	C
12	ground	25	patterns	38	A
13	Fossil tracks	26	mars	39	F
				40	B

Practice Test 6

Section 1		Section 2		Section 3	
Question	Answer	Question	Answer	Question	Answer
1	True	14	F	27	C
2	false	15	A	28	Need
3	True	16	C	29	The ashes
4	false	17	C	30	Vegetable cassava
5	Not given	18	D	31	houses
6	pods	19	E	32	C
7	Physical environment	20	D	33	B
8	mother	21	True	34	A
9	A, C, D	22	true	35	A
10	A, C, D	23	Not given	36	True
11	A, C, D	24	Not given	37	Not given
12	H	25	true	38	false
13	D	26	Not given	39	true
				40	B

Practice Test 7

Section 1		Section 2		Section 3	
Question	Answer	Question	Answer	Question	Answer
1	Plants	15	Spelling and pronunciation	28	C
2	breathing, reproduction (in any order)	16	500 (five) years	29	B
3	gills	17	Exact date	30	A
4	dolphins	18	Shape and dimensions	31	B
5	Not Given	19	patent	32	C
6	False	20	jazz	33	20
7	True	21	fans	34	Foam
8	3/ three measurements	22	5000	35	Waste water
9	Triangular graph	23	Visual depictions	36	harmful
10	cluster	24	The lute	37	biodegrade
11	amphibious	25	authenticity	38	droplets

12	Half way	26	luthiers	39	Lamination and packing
13	Dry-land tortoise	27	Solid body	40	Grape growers
14	D				

Practice Test 8

Section 1		Section 2		Section 3	
Question	Answer	Question	Answer	Question	Answer
1	F	14	E	27	Marine chronometer
2	E	15	A	28	B
3	C	16	E	29	B
4	B	17	G	30	D
5	G	18	B	31	D
6	D	19	True	32	B
7	A	20	false	33	Ferry
8	C	21	Not given	34	bicycle
9	A	22	Local time	35	fan/ceiling fan

10	D	23	2.8 seconds	36	Air conditioner
11	B	24	lubrication	37	mosquitoes/mosquito
12	B	25	(A/the) Sextant	38	A, C, E
13	D	26	angles	39	A, C, E
				40	A, C, E

Practice Test 9

Section 1		Section 2		Section 3	
Question	Answer	Question	Answer	Question	Answer
1	C	14	no	27	distance
2	A	15	I	28	fleet
3	B	16	C	29	lookout
4	A	17	D	30	midnight/12 am
5	C	18	A	31	Lifeboats
6	B	19	B	32	Wireless operations

7	No	20	A	33	(wireless) message
8	Not given	21	D	34	false
9	yes	22	Energy	35	Not given
10	yes	23	stratification	36	false
11	Not given	24	(bands of) bark	37	true
12	yes	25	(dry mountain) air	38	false
13	no	26	Ground cover	39	true
				40	Not given

Practice Test 10

Section 1		Section 2		Section 3	
Question	Answer	Question	Answer	Question	Answer
1	Stock market instability	14	Not Given	27	fire
2	Real estate	15	false	28	yes

3	Hunt for foreclosures	16	false	29	Not given
4	Mortgage repayments	17	true	30	no
5	Their money	18	true	31	yes
6	bargains/argain properties	19	false	32	B
7	Borrow too much/over borrow	20	true	33	C
8	yes	21	Not given	34	A
9	no	22	true	35	D
10	yes	23	wool	36	B
11	no	24	navigator	37	B
12	yes	25	gale	38	F
13	no	26	training	39	E
				40	A

Practice Test 11

Section 1		Section 2		Section 3	
Question	Answer	Question	Answer	Question	Answer
1	B	14	G	27	iii
2	A	15	C	28	vii
3	A	16	B	29	i
4	A	17	D	30	iv
5	C	18	B	31	ix
6	B	19	B	32	viii
7	E	20	A	33	v
8	C	21	False	34	ii
9	A	22	Not given	35	false
10	D	23	true	36	true
11	False	24	Not given	37	Not given
12	true	25	true	38	true
13	true	26	Not given	39	true
				40	B

Practice Test 12

Section 1		Section 2		Section 3	
Question	Answer	Question	Answer	Question	Answer
1	VIII	14	D	27	C
2	VII	15	B	28	Need
3	III	16	C	29	Ashes
4	I	17	A	30	Cassava
5	X	18	Muscular action	31	Houses
6	V	19	gizzard	32	C
7	Stigma tips	20	Essential minerals	33	B
8	Vivid color	21	Lubricating mucus	34	A
9	Iran	22	Water	35	A
10	False	23	N	36	True
11	True	24	Not Given	37	Not Given
12	Not given	25	True	38	False
13	True	26	Not Given	39	True
				40	B