

Reading Passage 1

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

Plague

Paragraph A

The word 'plague', which is found in a whole variety of written sources from the Ancient World to the early modern period in Europe, just meant a terrible and sudden mass visitation. The modern use of the word 'plague' to denote a specific disease affecting human beings generally refers to 'bubonic plague', now known to be caused by the bacillus, *Yersinia pestis*. This bacterium is noted for the very high death rates to which it leads, normally between a quarter and a half of the population in infected areas, with a morbidity running at twice that level. These very high rates of morbidity and mortality ensured that chroniclers, diarists and officials recorded plague epidemics whenever they occurred, usually describing the symptoms in detail.

Paragraph B

People most commonly acquire plague when they are bitten by a flea that is infected with the plague bacterium. People can also become infected from direct contact with infected tissues or fluids while being in contact with people who are sick with or who have died from plague. Finally, people can become infected from inhaling respiratory droplets after close contact with cats and humans with pneumonic plague.

Paragraph C

Plague started in ancient Egypt and then it divided and moved in one direction towards Alexandria and the rest of Egypt, and in the other direction, to Palestine on the borders of Egypt. From there it moved over the whole world, usually on the rats on boats. Because of this, plague always took its start from the coast of a country, and from there went up into the interior. Plague was especially effective at spreading at times favourable to it. Climate historians using studies of ice-cores and tree-rings have dated a sharp and serious deterioration in the climate in the years between 536 and 545. This was caused by volcanic eruptions in south-east Asia, covering the globe with a film of dust in the upper atmosphere, leading to poor harvests and bringing people into the towns, particularly Constantinople, in search of food. The conglomeration of people facilitated the spread of the disease. Wetter summers also favoured the growth of rat populations in Africa, which expanded their territory until they reached Europe.

Paragraph D

By 1348 it was in London and soon in the rest of Europe. By 1353, it had more or less run its course in the rest of Europe, but the devastation was immense: recent estimates have put the number of dead across Europe at 50 million, out of a total European population of 80 million. The local impact was often even more severe, with some villages being wiped out entirely. The disease affected everyone, rich and poor alike, and the countryside as much as towns

and cities. No one seemed immune.

Paragraph E

Contemporary medicine in the fourteenth century was initially overwhelmed by what was known as the Black Death and doctors usually agreed with popular opinion that it was no more than an expression of God's wrath. However, it was also recognised that there were intermediate causes too. While some insisted that epidemics occurred when the air was corrupted by a disease-laden 'miasma', others observed that it was carried from person to person by infection. With repeated visitations of the plague, the idea that it was transmitted and infectious gained currency. Still, even in the seventeenth century, it was assumed that infection occurred not so much from contagion by touch or breath, as through contamination from the air. Physicians developed a special costume with a hollow beak containing aromatic herbs to purify the air before they breathed it. Meanwhile, for many people, flight was an obvious remedy, though in fact it only helped spread the disease more rapidly. Physicians prescribed bloodletting or purgatives to restore the internal balance of humours within the body, or ointments to reduce swellings. None of these treatments had any effect. Pope Clement VI survived by staying in his apartment with constant fires; the heat killed any plague bacilli that came his way, and he survived.

Paragraph F

Although epidemics recurred in Constantinople in 1778, killing 100,000 people, and in Cairo in 1791, with a death toll of 60,000, this was in effect the end of the plague pandemic in Europe. Why did it retreat? There's no evidence that it declined in virulence or mutated into a less deadly form. It has been theorised that the westward spread of the brown rat from the Middle East displaced the black rat that carried the fleas that transmitted the plague, but the most likely explanation is that quarantines and controls were eventually effective in keeping plague at bay. In addition, restrictions on shipping became more effective with the growth of state control in the age of mercantilism.

Paragraph G

This was not quite the end of the story, however. In the mid-nineteenth century, a pandemic of plague began in China and thence spread with trade across the globe. Approximately 13 million people died worldwide by the end of the major first phase, the vast majority of which were in India. Outbreaks of plague on a small scale have recurred ever since then, but they have been quickly contained.

Paragraph H

The history of plague raises a number of questions, including the relationship of epidemics to human activity, to war, to trade, to patterns of urban living and to the nature of urban society. It forces people to look at poverty and wealth, sanitary reform, popular prejudice and unrest, and the role of government in society.

Glossary

Morbidity – The number of people ill (not necessarily dead).

Miasma - A nasty or unpleasant smell.

Questions 1 - 8

The text on the previous pages has 8 paragraphs (**A – H**).

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

Write the correct number (**i – xi**) in boxes **1 – 8** on your answer sheet.

- | | |
|------|-----------------------------|
| i | Modern Plague |
| ii | The Effects |
| iii | The New Vaccine |
| iv | The Infection |
| v | The Lessons to be Learned |
| vi | The Spread from its Origins |
| vii | The Economic Costs |
| viii | The Name |
| ix | The First Victim |
| x | The Prevention |
| xi | The Early Medical Approach |

- | | |
|---|-------------|
| 1 | Paragraph A |
| 2 | Paragraph B |
| 3 | Paragraph C |
| 4 | Paragraph D |
| 5 | Paragraph E |
| 6 | Paragraph F |
| 7 | Paragraph G |
| 8 | Paragraph H |

Questions 9 - 13

Answer the questions below.

Write **NO MORE THAN THREE WORDS** from the text for each answer.

Write your answers in boxes **9 - 13** on your answer sheet.

- 9 What type of plague (Black Death) can be passed on by breathing in other people's exhalations?
- 10 Where did new plague outbreaks usually start in a country?
- 11 What was the stimulus for the higher rat populations in Africa that helped the spread of plague?
- 12 What did doctors use in their face coverings to help purify the air they breathed while treating patients suffering from plague?
- 13 In conjunction with quarantines and controls, what other government-organised acts of control helped hinder the spread of plague?

Mind Over Matter

Literally, mind over matter would refer to psychokinesis, the capacity to move objects by mind power alone. There has never been any evidence that this is possible and any claims to the contrary are usually extremely untrustworthy. The popularity, however, of 'alternative' cures in medicine is widespread and popular and, despite lacking any credible rationale, people often seem to benefit from them. Most alternative medicines have no scientific basis. Homeopathic medicine, for example, is often so dilute that it contains no molecules of 'active' ingredient. Acupuncture and reflexology are based on bizarre, ancient theories with no anatomical logic. Despite that, many people swear all by these methods.

Suggestion is a powerful force. 'The Placebo Effect' (literally "I shall please") refers to an alleviation of symptoms due to the belief that one is being treated and the expectation that one will get better (in addition to any physical properties of the medicine). Placebos range from dummy pills and sham surgery to encouraging words, like "you should be better in a couple of days". They are routinely used as controls in the evaluation of treatment and are often extremely effective. Placebos are not the same as no-treatment or 'wait-list' controls in that they usually give some degree of added value. Other components to the Placebo Effect that clinical trials usually try to minimise include the doctor-patient connection and assurance that the medicine has 'clinically proven' potency. There is also regression to the mean; patients usually seek help at times of peak distress and so they are likely to improve simply on the 'law of averages' and because the crisis point has been reached.

Subsidiary tools are also useful in conjunction with placebos. Symbols of medical authority, such as diplomas on the wall, white coats and stethoscopes, enhance the placebo effect. Warm coloured pills are better as stimulants and cool-coloured pills are better for anxiety and insomnia. Pills work better when they are large and expensive and two is better than one. Capsules are more effective than tablets, while injections beat both. In spite of all that, not everyone responds to placebos and they are ineffective for certain conditions, such as blood poisoning. Apart from the placebo, state of mind can have a significant effect on health. Individuals who respond most to placebos are high in optimism and, if people believe there will be an effect, there often is. In general, feelings of well-being reduce overall mortality and, by contrast, negative life events such as divorce, the death of a loved one, the loss of a job, catastrophes and earthquakes can have negative health consequences.

Psychogenic factors affect the ability of the immune system to fight off various diseases, including cancer. Research has found that patients who had suffered neglect or maltreatment when younger are at greater risk of their disease returning when they face a major current stressful event. The reason appears to be that many diseases are normally contained by the immune system, which may be impeded by life stress. Chronically stressed people are also more likely to contract a cold when exposed to the virus, because their immune functions have been depressed.

A procedure that attempts to mobilise psychological factors in the treatment of disease is called 'guided imagery'. Patients are helped to focus on dream-like scenarios that induce

feelings of safety, relaxation and happiness. Another procedure different to guided imagery is to have patients imagine their immune system attacking their disease. These approaches can be supportive in reducing pain and distress, but they have less impact on physical symptoms and there is no evidence that they can actually cure any serious disease. Another psychological treatment is biofeedback. A fundamental principle of learning is that knowledge of results is helpful. Biofeedback works on the theory that if people are able to monitor their own physiological processes with devices, such as the EEG, ECG, skin conductance or skin temperature, they are better able to take control of them. There is abundant evidence that this is a useful adjunct to therapy for conditions such as anxiety, panic and age-related diseases.

Psychological treatment is also important for problems with a psychological cause. Conversion disorders are conditions such as paralysis, blindness and amnesia that are apparently psychogenic. Conversion disorders are so-called because psychological stress is presumed to have been 'converted' into a physical disability. Placebo treatment might be effective, but it is also usually necessary to have extended psychological treatment. Hypnosis is one very effective treatment for this type of disorder, as it can be with many problems. Hypnosis provides a powerful example of the power of suggestion and its effects go beyond simple role-playing. Again, hypnosis cannot make any material difference to physical ailments, but it can work with psychological ones. For example, patients may be told they can make speech with confidence or that their cigarettes taste foul.

Mind and body are clearly intertwined and few disorders are purely physical or mental. For example, peptic ulcers were once thought to be entirely due to stress, but then it was found that 80 per cent involved the bacterium, *Helicobacter pylori*, and would respond to antibiotics. Psychosomatic effects are real, not illusory. Their action can be observed in the brain and they have a powerful impact upon people's health. They need to be studied in order to control their harmful effects and to harness them to people's benefit. It may not always be 'mind over matter', but mind certainly does matter.

Glossary

Psychogenic - Psychological.

Questions 14 - 19

Do the following statements agree with the views of the writer of the text?

In boxes 14 - 19 on your answer sheet write:

- YES** *if the statement agrees with the writer's views*
- NO** *if the statement doesn't agree with the writer's views*
- NOT GIVEN** *if it is impossible to say what the writer thinks about this*

- 14 True psychokinesis was first displayed at the start of the twentieth century.
- 15 The majority of alternative medicine has no proper medical foundation.
- 16 A placebo can just be a verbal comment.
- 17 The relationship between doctor and the people they are treating can affect the results of clinical trials.
- 18 Telling a patient that a placebo is being used is illegal in some countries.
- 19 A traditional symbol of authority, like the doctor's white coat, has no added effect on a placebo.

Questions 20 - 23

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

Write the correct letter in boxes **20 - 23** on your answer sheet.

- 20 Placebos are more effective
- A with people with a positive frame of mind.
B when administered on a regular basis.
C with people who are extremely suggestible.
D when patients are not anxious about their problem.
- 21 Psychological trauma in patients when young can
- A strengthen the immune system over time.
B make a placebo's reassuring effect more successful.
C cause a disease to return if they experience stress later in life.
D help them deal with stressful situations later in life.

- 22 Doctors can use guided imagery to
- A allow patients to visualise their immune systems battle against disease.
 - B increase patient mobility.
 - C help patients to relax.
 - D help patients benefit from more sleep.
- 23 The effectiveness of biofeedback is
- A better when patients choose their own medicines.
 - B is helpful when used with other treatments.
 - C only apparent when conducted in hospital conditions.
 - D when patients' temperatures are high with fever.

Questions 24 - 26

Complete each sentence with the correct ending (A - E) below.

Write the correct letter (A - E) in answer boxes 24 - 26 on your answer sheet.

- 24 Psychological treatments for conversion disorders
- 25 The benefits of hypnosis
- 26 The causes of peptic ulcers
- A were impossible to identify.
 - B need to be carried out over a long time.
 - C were wrongly attributed at first.
 - D are extremely expensive.
 - E are not applicable to physical problems.

Reading Passage 3

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

Aqueducts

In antiquity, aqueducts were a means to transport water from one place to another, achieving a regular and controlled water supply to a place that would not otherwise have received sufficient water to meet basic needs, such as the irrigation of food crops and drinking fountains. They may take the form of underground tunnels, networks of surface channels and canals, covered clay pipes or monumental bridges.

It is the Romans who rightly gained celebrity as the aqueduct builders par excellence. Hugely ambitious engineering projects successfully mastered all kinds of difficult and dangerous terrain and made their magnificent arched aqueducts a common sight throughout their empire. Roman aqueducts supplied towns with water to meet not only basic needs, but also those of large public baths, decorative fountains and private villas.

Whilst most aqueducts ran along the surface and were adapted to the land contours wherever possible, the Roman invention of the arch allowed for the construction of large-span structures. Arched bridges running across the valley floor could also lessen the height water had to fall and more importantly, go up on its ascent when necessary. Stopcocks to manage pressure and regulate the water flow, storage reservoirs, settling tanks to extract sediment and mesh filters at outlets were other features of Roman aqueducts. Sometimes, water was also 'freshened' by aerating it through a system of small cascades. Interestingly, Roman aqueducts were protected by law and no agricultural activity was allowed near them in case of damage by ploughing and root growth. On the other hand, agriculture did benefit from aqueducts, as in many cases run-off channels were created to provide water for land irrigation. The Romans also employed new materials, such as concrete and water-proof cement, which could ignore unfavourable land features and draw the water along the straightest possible route giving a regular gradient. Similarly, an increase in engineering expertise allowed for large-scale projects and tunnels.

Another innovation that allowed Roman aqueducts to cross valleys was the inverted siphon. These were made of clay or multiple lead pipes, reinforced with stone blocks and with the power of gravity and pressure. As the water ran down the valley, the momentum gained could drive the water up the opposite side. The quick changes of pressure and sometimes volume, depending on the lengths of the drops and rises, meant that an airshaft was necessary for equalisation when the water resumed its normal downwards flow.

One of the most significant aqueducts built by the Romans ran for 106 kilometres from modern-day Jordan to barren Palestine. Qanat Firaun, 'The Canal of the Pharaohs,' is what the locals call the weathered old pipeline, but research recently carried out has discovered that it was Roman work. Starting in a since dried out swamp in Jordan, it carried water to the city of Gadara, a city that has also disappeared. The aqueduct was covered the whole way, which had several benefits. Firstly, this protected the water from animals, birds and dust. Secondly, this is a very hot area in summer and the cover prevented evaporation and loss of water. Finally, the cover prevented light from reaching the water, which stopped the growth of algae that would have spoiled the water's freshness.

Rome itself was generously served by a water system including eleven different aqueducts. When water reached Rome, it flowed into enormous cisterns maintained on the highest ground. These large reservoirs held the water supply for the city and were connected to a vast network of lead pipes. The water system was as politically motivated as any other massive public works project. Providing additional sources of incoming flow, feeding the baths or simply providing water access to more of the populace could grant great prestige. At the height of the ancient city's population of approximately 1,000,000 inhabitants, the water system was capable of delivering up to one cubic meter of water per person per day in the city, more than what is commonly available in most cities today.

Maintenance of the water system was a continuous task, and the Romans assigned a 'Curator Aquarum' to oversee this undertaking. Paid labourers, slaves and the military all had parts in building parts of the water system. The Curator Aquarum maintained the aqueducts of Rome, while similar curators oversaw those in the provinces. The army, however, when building new colonies or forts, were responsible for providing their own water supply. Just as they were the great road builders of the Empire, the Romans also revolutionised societies with their aqueduct construction in outlying areas.

Although famously associated with the ancient Romans, aqueducts were also devised centuries earlier in the Middle East, where people including the Egyptians built sophisticated irrigation systems. Roman-style aqueducts were used as early as the seventh century BCE, when the Assyrians built an 80-kilometre limestone aqueduct 10 metres high and 300 metres long to carry water across a valley to their capital city, Nineveh.

Much of the expertise of the Roman engineers was lost in the Dark Ages, and in Europe, the construction of aqueducts largely ceased until the nineteenth century. During this period, water was instead usually supplied through the digging of wells, though this could cause serious public health problems when local water supplies became contaminated. The nineteenth century saw aqueduct-building resume on a large scale to supply fast-growing cities and water-hungry industries, with the industrial revolution providing technology to push through water in areas of difficulty. In modern times, the largest aqueducts of all have been built in the United States to supply its enormous cities. The most notable are the Colorado River Aqueduct, which supplies the Los Angeles area with a 400-kilometre aqueduct, and the California Aqueduct, which runs 714 kilometres.

Questions 27 – 31

Complete the summary below.

Write **NO MORE THAN TWO WORDS** from the text for each answer.

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

ROMAN AQUEDUCTS

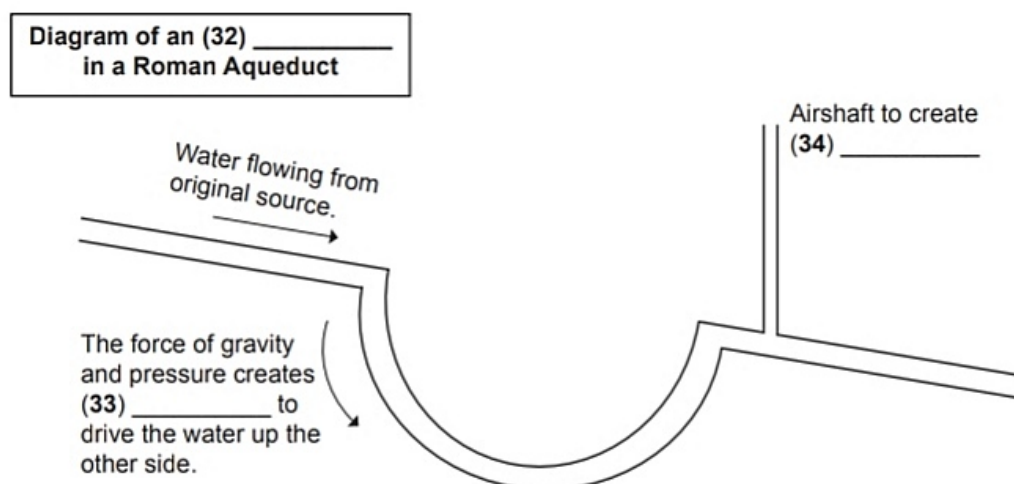
Aqueducts were made through history for a variety of uses and in a variety of forms. Roman aqueducts supplied the water for the (27) _____ of settlements, as well as some luxuries and some domestic demands.

To make things easier, Roman aqueducts ran along the ground and followed (28) _____ if they could. They benefitted from new materials and technology to exploit the most direct routes in enormous projects, often using tunnels.

The Romans developed stopcocks and storage tanks and used (29) _____ and filters to extract anything undesirable from the water. (30) _____ were also used to keep the water fresh. The Romans banned (31) _____ near aqueducts to prevent accidental damage, but farming benefitted from irrigation.

Questions 32 - 34

Label the diagram below. Write **NO MORE THAN TWO WORDS** from the text for each answer. Write your answers in boxes 32 - 34 on your answer sheet.



Questions 35 - 40

Do the following statements agree with the information given in the text? In boxes 35 - 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*

- 35 The city of Gadara still benefits from water brought to it by Roman constructions.
- 36 Political scandals surrounded the construction of many of the aqueducts that transported water to Rome.
- 37 Provincial curators were not responsible for providing the Roman military with fresh water.
- 38 The Assyrians built aqueducts that were similar in many ways to the later Roman aqueducts.
- 39 The use of wells following the Roman aqueduct era provided an enduring safe source of water.
- 40 US aqueducts today require investment from private companies, as the government refuses to invest.