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**Academic  
Reading  
Practice Test  
25**

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## Reading Passage 1

You should spend about 20 minutes on Questions 1-16 which are based on Reading Passage 1.

Librarians may be able to save millions of books from slowly crumbling with a new chemical process that uses a hazardous flammable compound, diethyl zinc (DEZ). Chemists in the US have successfully completed an 18-month trial of the technique, which neutralises the acids in paper which cause books to decay.

The method was developed by the Dutch chemical giant, Akzo, in collaboration with the US Library of Congress. It can treat 1,000 books at a time at a fraction of the cost of microfilming.

The world's libraries and archives are today stocked mainly with books that are destroying themselves because of a new way of making paper that was introduced in the middle of the last century. In this process, wood pulp became the main source of the cellulose from which paper was made, replacing the cotton or linen rags used previously.

Unfortunately, book publishers were unaware that wood pulp's slight acidity would eventually threaten their work. The acid attacks the cellulose polymer of paper, breaking it down into shorter and shorter pieces until the paper's structure collapses.

The only answer is to neutralise the acids in the paper by chemical means. This has generally been done by unbinding the book, treating it page by page with a carbonate solution, and then rebinding it. The cost can be as much as £200 per volume. Akzo's method can be done without taking the binding off the book.

On the face of it, DEZ would seem the last chemical that should be brought in contact with paper. This volatile liquid bursts into flames when it comes in contact with air. However, it is not DEZ's sensitivity to oxidation which is the key to its use as a preserving agent, but its ability to neutralise acids by forming zinc salts with them.

Because DEZ is volatile it permeates the pores in paper. When it meets an acid molecule, such as sulphuric acid, it reacts to form zinc sulphate and ethane gas. DEZ is such a strong base that it will react with any acid, including the weaker organic ones. It will also react with any residual water in the paper to form zinc oxide. This is an added bonus for the book conservators, since it buffers the paper against future permeation by acidic gases from the atmosphere such as sulphur dioxide.

Not only will DEZ protect against acid attack but it is also capable of neutralising alkalis, which threaten some kinds of paper. It can do this because zinc oxide is amphoteric - capable of reacting with either acids or alkalis.

The Akzo method treats closed books and protects every page. It adds about 2 per cent of zinc oxide to the weight of the book. Much of this is deposited near the edges of the pages, the parts which are most affected by the acid from readers' fingers or environmental pollution. The only risk in the Akzo process comes from the DEZ itself; this caused a fire at NASA's Goddard Space Flight Center where earlier tests on the method were carried out.

For the process, the books are gently heated under vacuum for a day to remove residual traces of moisture. The chamber is then flushed with dry nitrogen gas for five hours to remove the remaining air before DEZ is introduced at a low pressure into the gas stream. DEZ is passed through for about eight hours. Unreacted DEZ is trapped out of the exit gases and recycled, while the ethane is burned off.

When the process is complete, the chamber is purged with nitrogen to remove residual DEZ. The whole process takes about three days. The cost per book is about £2, considerably less even than the £40 for microfilming.

This work was originally funded by the US Library of Congress, which has over 10 million books now at risk. According to Dick Miller, Akzo's director for book preservation, tests have shown that the method can deal with hundreds of books at a time. A million books a year could be rescued by the new process, for which Akzo has been granted exclusive rights. The treated books should then survive for hundreds of years.

Another national institution, the British Library, launched an adopt-a-book scheme to help it meet the costs of processing books. The British Library has so far raised over £80,000. But if the traditional method is used, this will barely cover a twentieth of 1 per cent of the 2 million books the Library needs to treat.

Edmund King of the British Library's preservation service says that the Library has developed another method which coats the individual fibres of the paper with ethyl acrylate polymer, protecting the books not only against acid attack but actually making them stronger. The British Library is now seeking an industrial partner to exploit its work.

### Questions 1-4

Do the following statements summarise the opinions of the writer in Reading Passage 1?  
In boxes 1-4 of your answer sheet write:

- YES** if the statement agrees with the writer  
**NO** if the statement does not agree with the writer  
**NOT GIVEN** if there is no information about this in the passage

1. The Akzo preservation method is more expensive than the traditional method.
2. The Akzo preservation method can treat more books at one time than the traditional method.
3. The US Library of Congress must treat more books than the British Library.
4. The traditional preservation method adds more weight to the book than the Akzo method.

### Questions 5-8

The text describes a chemical, diethyl zinc (DEZ). From the list below, choose 4 attributes of DEZ as described in the passage. Write the appropriate letters A-H in any order in boxes 5-8 on your answer sheet.

#### Attributes of DEZ

- A It bursts into flames when it comes in contact with air.
- B It forms a protective layer of zinc oxide on the surface of the paper.
- C It changes acid into zinc sulphate throughout the paper.
- D It reacts with acids to produce zinc salts and water.
- E It can react with both acids and alkalis.
- F The chemical reactions it causes make books heavier.
- G It coats the fibres of the paper with ethyl acrylate polymer.
- H It tends to retain water within the paper structure.

The four attributes of DEZ are:

5. \_\_\_\_\_

6. \_\_\_\_\_

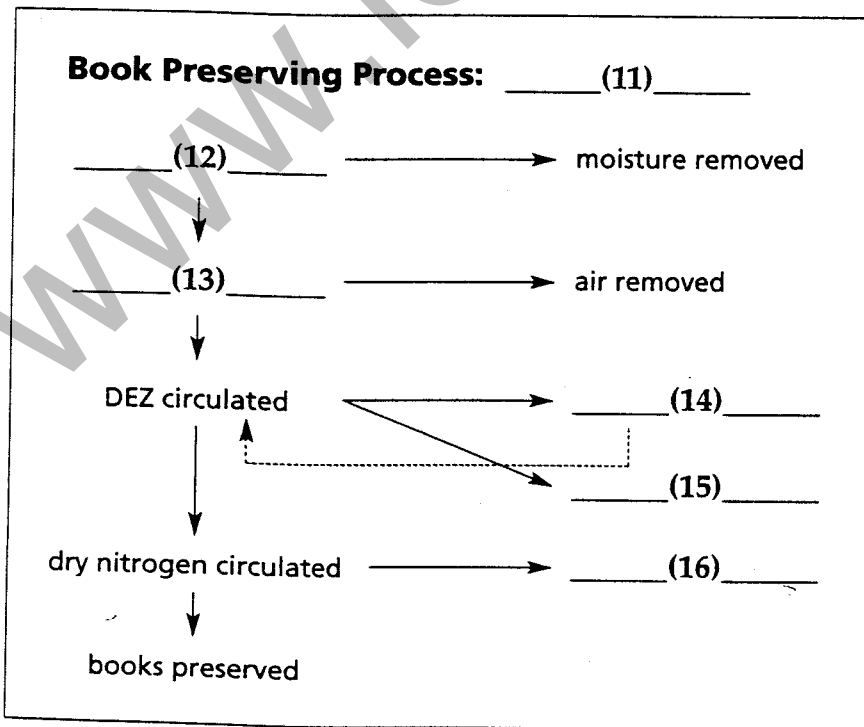
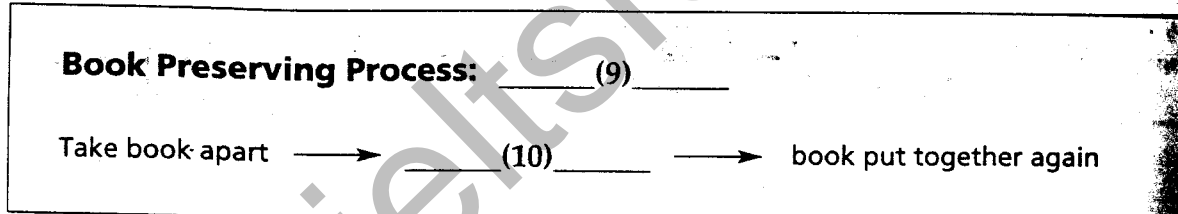
7. \_\_\_\_\_

8. \_\_\_\_\_

Questions 9-16

Complete the following flowcharts using phrases from the box below. Write the appropriate letter A-L in boxes 9-16 on your answer sheet. There are more phrases than you will need. Each phrase may be used more than once.

- A Books are cooled
- B Books are heated
- C Unused / leftover DEZ gas removed
- D Unused / leftover DEZ gas burned
- E Unused / leftover DEZ gas reused
- F Dry nitrogen gas is circulated
- G Each page treated with carbonate solution
- H Each page treated with DEZ
- I Akzo preservation method
- J British Library preservation method
- K Ethane gas removed and burned
- L Traditional preservation method



## Reading Passage 2

You should spend about 20 minutes on Questions 17-31 which are based on Reading Passage 2.

Thin is in, in America. Not only fashion magazines, but also doctors proclaim the importance of a slim, healthy body. Yet despite the current obsession with the trim, taut and terrific body, Americans are putting on weight. In studies conducted in 1980, one quarter of Americans were found to be overweight. Fifteen years later, that number had risen to one third of the population.

In the past, doctors have always recommended a combination of diet and exercise to combat obesity. With the increase in the number of people who are overweight, however, this solution is increasingly being seen to be ineffective.

Given that diet and exercise often do not help produce weight loss, scientists are becoming convinced that, for many, obesity is a genetic disorder. In 1994 a research group at Rockefeller University discovered in experiments on mice what is now called the obesity, or "ob" gene. In turn this discovery led to the identification of a hormone, termed leptin, that signals to the brain the amount of fat stored in the body. When injected into the rodents, the hormone reduced appetite and increased the body's utilisation of calories, the energy produced by food which the body may convert to fat. With findings like these, a large number of medical experts are turning to a selection of drugs which appear to be safe and effective in reducing weight and maintaining lower weight levels.

Because they see obesity as an illness, these authorities claim that treatment should involve not only diet and exercise but drugs as well. What they have in mind is not just a short course of medication to produce small degrees of weight loss. They want to prescribe long-term, perhaps lifetime, drug therapies, just as they might for high blood pressure or diabetes. Obesity's victims, these doctors hope, will not only be able to lose weight, but will also keep that weight off forever.

Not everyone in the medical community is satisfied with the new therapies. Conservatives are seriously worried that the new drugs are, in fact, merely placebos ("medicines" that have no medical effect but may benefit the patient psychologically), or, worse, are actually detrimental to patients' health. Their concerns are understandable. A few decades ago amphetamines - nicknamed "uppers" or "speed" - were widely prescribed to control weight. Patients became slimmer, but suffered from tension and irritability, higher pulse rates, and sleepless nights, side effects that may have outweighed the medical benefits of lower body weight. Conservatives also point out that risky as amphetamines were, they were generally prescribed only for temporary use. Advocates of new drug treatments leave open the possibility that the medications will be prescribed for a lifetime.

While there are at least 5 new diet drugs waiting approval by the US Drug and Food Administration, at the moment, the only diet medication that is normally used in the US is "fen-phen", a combination of the drugs fenfluramine and phentermine. Fenfluramine boosts serotonin, which elevates mood, while phentermine mimics other substances in the brain. Together, the drugs suppress appetite and increase the rate of burning of calories. As its success becomes more widely known, demand for this medication is increasing. Prescriptions for fenfluramine in 1995 were expected to be four times what they were the previous year.

For several reasons, however, fen-phen is not the perfect diet medication. First, there is some debate over safety, although most fen-phen researchers say the drugs pose minor health risks compared with amphetamines. For most patients the short-term side effects are negligible; phentermine heightens alertness while persuading the body to burn more calories, and fenfluramine, thought to cut cravings for starches and sweets, can cause drowsiness. But some users experience a racing heartbeat and, although rarely, high blood pressure. While its effects are milder than those of amphetamines, the feeling of higher energy that fen-phen stirs can be habit-forming. Used alone, phentermine has enough kick to appeal to recreational drug users, who call it "bumblebee". Perhaps even more importantly for dieters, while the drug may cause initial weight loss, over a period of several years, subjects taking the drugs tended to regain some of the weight they had lost - although at a slower rate than those who did not take fen-phen.

Many conservative doctors, moreover, still remain reluctant to diagnose obesity as a disease. In a 1987 survey of 318 physicians, two thirds said their obese patients lacked self-control, and 39% described them as lazy. This traditional view holds that obesity results from a lack of discipline, correctable by diet and exercise. Since studies show that most dieters eat more than they say - or even think - they do, there is probably some truth in seeing a much simpler cause.

On the other hand, the traditional view is challenged by the discovery of the ob gene, which would seem to place significant weight loss outside the individual's control. Then there is the problem of the ever-increasing numbers of obese people with the resulting increase in hypertension, and diabetes, leading to kidney failure and heart disease. All of these conditions require medication, if not costly equipment and surgery. If all of these effects of obesity must be treated with medication, why refuse medical treatment to help control body weight? Is not prevention better than a cure?

### Questions 17-20

Choose the appropriate letter A-D and write it in boxes 17-20 on your answer sheet.

17. A hormone called leptin has recently been discovered. According to the passage, this hormone
- A increases drowsiness
  - B increases appetite
  - C increases fat production
  - D improves the use of energy from food.
18. Conservative doctors do not like the drug therapies for obesity because
- A they are based on amphetamines
  - B they are expensive
  - C they may be taken for long periods of time
  - D they cause kidney failure.
19. The number of drug-based diet treatments used at present in the US is
- A 5, including amphetamines
  - B 5, not including amphetamines
  - C 1
  - D none.
20. One disadvantage of fen-phen is that
- A taken long term, people tended to gain weight previously lost
  - B it can only be taken for short periods of time
  - C it causes irritability and sleeplessness
  - D too many people use it.



### Questions 21-23

Below are some of the treatments commonly used to treat obesity. Match each treatment with ONE disadvantage mentioned in the text by writing the letter A-G in boxes 21-23 on your answer sheet.

TREATMENTS
21. Traditional weight loss methods
22. Amphetamines
23. Fen-phen

DISADVANTAGES
A excessive weight loss
B kidney failure
C low blood pressure
D possibly addictive
E rapid beating of the heart
F dizziness
G regularly ineffective

### Questions 24-31

Complete the paragraph below using words and phrases, marked A-L, from the box below. There are more words and phrases than you will need. You may use any word or phrase more than once. Write the appropriate letters A-L in boxes 24-31 on your answer sheet.

Some doctors in the USA believe that obesity should be treated, like any illness, with \_\_\_ (24) \_\_\_, but many conservative doctors see obesity as mainly controllable through \_\_\_ (25) \_\_\_. These doctors are concerned by the use of \_\_\_ (26) \_\_\_ to treat obesity for several reasons. Firstly, many cause \_\_\_ (27) \_\_\_ which can diminish the benefits of weight loss. Furthermore, these doctors believe that such treatments should be used for \_\_\_ (28) \_\_\_ but many drug therapists are prepared to use them for \_\_\_ (29) \_\_\_.

On the other hand, there is evidence that obesity is related to the body's production of \_\_\_ (30) \_\_\_ and therefore is an illness. Recent discoveries of \_\_\_ (31) \_\_\_ in fact go further and seem to remove responsibility for obesity from individuals.

- |                         |                        |
|-------------------------|------------------------|
| A weight loss           | G body fat             |
| B short periods of time | H drug therapies       |
| C diet and exercise     | I hormones             |
| D an illness            | J weight gain          |
| E calories              | K the "ob" gene        |
| F side effects          | L long periods of time |

### Reading Passage 3

You should spend about 20 minutes on Questions 32-42 which are based on Reading Passage 3.

#### The Introduction of the Aged Pension in Australia

Australia was settled by Europeans in 1788, mainly to house criminals, but with a few independent farmers and business men. The settlements were not wealthy, and there was little help available to those in need: the poor, the sick, the unemployed, the aged. To begin with, what little help was available came in the form of charity: donations of money, accommodation or medical treatment to selected needy. A second approach that began to emerge in the late nineteenth century was that of "universalism". It stressed that all people in society should be entitled to certain benefits - up to a minimum level and across a restricted range of services. This approach was eventually used to argue for the introduction of a pension for the aged poor.

It was an area of welfare which had been the subject of active debate in England since the mid-1880s or earlier. A number of proposals were discussed in England, and by the mid-1890s, in Sydney. These included schemes based on voluntary contributions of money to an insurance fund during working years, on various proportionate compulsory contributions from employer and employee, or on the payment from the state to a defined category of people. The German scheme of compulsory health and unemployment insurance payments from worker, employer and the state, was also examined.

It should be noticed that the proportion of the colonies' populations over 65 years of age was rising steadily. In 1861 in New South Wales it had been 1.4 per cent; by 1891 this had risen to 2.5 per cent, and by 1901 was 3.4 per cent. In absolute numbers in 1901, that was over 46,500 people. In general terms, there was a 60 per cent increase in the ten years from 1891 to 1901 in the number of people over the age of 65 living in the colonies, a rate of growth about twice as fast as that of the general population of the colonies. This demographic fact set the scene for consideration of the problem of the aged poor.

In New South Wales the difficulties of the depression of the 1890s encouraged the Benevolent Society, the largest charity in the state, to support the idea of an age pension because this would ease its own burden. However, it took the positive action of humanitarians to get the movement going. J.C. Neild was both a free-trade politician and an insurance company officer with some experience of the actual conditions of poverty of working-class people struggling to maintain respectability as the implications of age loomed large in their lives. He knew at first hand how difficult it was for such people to maintain insurance policies, however modest. He pressed for action in 1895 to "empty the barracks" (large dormitories to house the poor) of their aged inmates, barracks already so full and overcrowding rapidly. Canon Bertie Boyce and Sir Arthur Renwick added Christian support and energy, convening an important public meeting and promoting the idea in the press. Then the Labor (socialist) Party took up the idea early in 1896. Government

administrators involved in poor relief, such as Sydney Maxted, supported the idea too, because they believed it would be cheaper than institutional care. In 1896 the government therefore selected a group of politicians, a Select Committee, to examine the question of state insurance, old age pensions and invalidity. The Committee found government and voluntary organisers welcoming a pension for the aged as another means of helping the poor, as well as emptying the barracks and saving money. But the chairman of the committee, E.W. O'Sullivan, put an entirely different interpretation on the matter. He did not regard an aged pension as an addition to the instruments of selective charity. He argued in the report for a pension funded by specific community taxes, not one tied to employment or to voluntary contributions. He wanted a pension which, moreover, would be:

A free gift from the State ...[to those] who have for a fair period assisted to create our civilisation, aided in the development of the resources of the country, and helped to bear the public burdens of the community by the payment of taxes.

Here was a firm assertion of the universal principle of entitlement based on citizenship. The Select Committee's report also contained enough limitations about potential recipients to make it politically acceptable. It was, with all its ambiguities and qualifications, the working basis of a universalist approach to the problem of caring for the aged poor which asserted a clear claim on their behalf to some degree of dignity and independence as a right. Instead of chancy selective charity leading to early institutionalisation and consequent physical decay, here was an opportunity for social action on a consistent, statutory basis, taking existing family life as its foundation.

The New South Wales Old Age Pensions Act came into being in 1900, followed over the next few years by similar acts in the other states. It was not till 1908 that these quite disparate state arrangements were replaced by Commonwealth (federal) legislation. There were, as almost always in universalist schemes, financial criteria. Only a specific category of citizens would benefit. Income in excess of £52 per annum or property valued in excess of £310 would deny the pension, while income between £26 and £52 per annum proportionately reduced the pension.

It is clear that the Commonwealth government of the time, led by Deakin for the Labor Party, shared a radical view of social forces which emphasised the problems outside individual control, and the paternal responsibility of the government to acknowledge the universal rights of its citizens. The older tradition of liberal individualism which set such store by self-improvement and personal responsibility was not widely upheld in the federal area. Nor should it be forgotten that the worst of the drought of the 1890s was past, and federal government income was buoyant. Arising out of that complex of idealism and pragmatic search for workable cash benefits, the Commonwealth old age pension came into being on 1 July 1909, bringing years of bureaucratic and political manoeuvre to cope with its application, extension or even containment, during which some of the difficulties of universalism were to be vividly revealed.

**Questions 32-37**

Complete the sentences using numbers from the text. Write your answers in boxes 32-37 on your answer sheet.

32. In 1901, the proportion of people over 65 was \_\_\_\_\_
- 33 & 34. From \_\_\_\_\_ to \_\_\_\_\_ the number of aged people increased much faster than the general population in Australia.
35. When the pension was first introduced, people with property worth more than \_\_\_\_\_ would not be able to get a pension.
- 36 & 37. When the pension was first introduced, people earning more than \_\_\_\_\_ and less than \_\_\_\_\_ would only receive a portion of the pension.

**Questions 38-41**

In the reading passage, several opinions on care for the aged are discussed. These opinions are summarised in the sentences below. Answer questions 38-41 by writing the NAME of the person or philosophy supporting each idea in boxes 38-41 on your answer sheet.

38. Every person in society has the right to receive certain benefits.
39. It is less expensive to pay pensions than to care for the elderly poor in government facilities.
40. Older people deserve a pension because of the contribution they have made to society throughout their lives.
41. It is up to people to look after themselves and to improve their own lives.

**Question 42**

In box 42 on your answer sheet, write the name of the philosophy of social responsibility that ultimately provided the basis for the Australian old age pension scheme.

42. \_\_\_\_\_