

## READING

### SECTION 1.

#### Questions 1-5

Look at the six advertisements for student accommodation, A-F. For which advertisements are the following statements true? Write the correct letter (A-F) in boxes 1-5 on your Answer Sheet.

NB You may use letters more than once.

- 1 It is possible to cook in the room.
- 2 Food is provided as part of the price.
- 3 You have your own bathroom.
- 4 The room is available for a limited period only.
- 5 There is a safe place to keep your bicycle.

A

#### ROOM AVAILABLE

- Small room available in a shared student house
  - Use of kitchen, sitting room and shared bathroom
- Handy for university and city centre  
*Sorry no space for bicycles indoors*  
*Small breakage deposit payable in advance*  
Non-smokers only

CALL 030-4132-9860

B

#### LARGE SINGLE ROOM AVAILABLE

- Hot and cold running water
  - Use of shared bathroom
  - Parking space available on request
  - Internet connection (payable monthly)
- Annual contract – rent payable monthly*  
References required

CALL 030-7658-0098

C

#### ARE YOU LOOKING FOR A NICE ROOM IN A CLEAN HOUSE?

- We are four post-grad students looking for a housemate
  - The house is in a good suburban area close to public transport links
  - The room has use of a shared kitchen and bathroom
  - Meals are eaten together (mostly vegetarian) and costs shared
  - Space for one bicycle in the (lockable) garden shed

*Reasonable rent payable monthly in advance*  
*All applicants will be interviewed*

CALL MEL ON 030-9909-7786

D

SINGLE ROOM AVAILABLE IN A FAMILY HOUSE

- Small room with TV
- Rent includes meals on a half-board basis
- Would suit an overseas student
- Eat with the friendly family – practise your English!
- Close to bus routes (city centre 20 minutes)

*Pay weekly in advance  
No long-term contract involved*

CALL 020-3321-0987 FOR DETAILS

E

ROOM AVAILABLE IN A STUDENT RESIDENCE

- Purpose-built block with laundry, internet access and shared kitchen
- Private shower and wc
- Ample car-parking
- Supervised entrance staffed 24-hours a day

*Six-month contract  
Payment in advance quarterly*

CALL PROPERTY MANAGEMENT  
ON 030-9988-9884

F

ANYBODY WANT TO USE MY ROOM FOR THE SUMMER?

I'M OFF TRAVELLING, SO THE ROOM WILL BE FREE FOR TWO MONTHS IN JULY AND AUGUST

- It's a nice room in a shared house
- Small kitchen corner with microwave and sink
- Bathroom shared with one other student (probably away too!)
- Close to the university sports ground
- City centre four miles

*Come and have a look and make me an offer*

GILES 030-9988-6654

**Questions 6-14**

**Answer the questions below. Write the correct section (A-E) in boxes 6-14 on your answer sheet. Which section of the website (A-E) should you click on if:**

**6 you have received a letter at your house which is addressed to somebody you don't know?**

**7 you have a large envelope to post which is not very heavy and you want to know if it will cost more?**

**8 you want to send some books to a friend in another country?**

**9 you want to know if you are allowed to send fresh food through the post?**

**10 you would like to post some money to your family and want to know the best way?**

**11 you have to send an urgent letter and need information about the fastest service?**

**12 you are moving to a new address and want your mail sent there instead of to your current address?**

**13 you want to pay for postage over the internet?**

**14 you want advice on the best type of envelope to use for a small parcel?**

**Information for Post Office Users**

**A Sending UK letters and parcels**

- Compare sending options
- First and Second Class mail
- Standard Parcels
- Express Parcels
- Special Delivery™
- Recorded Signed For™
- Royal Mail Sameday®

**B Receiving letters and parcels**

- Compare services
- Redirection options
- Keepsafe™ mail holding service
- PO Box®
- Royal Mail Local Collect™
- Wrongly delivered mail

**C Overseas letters and parcels**

- Compare overseas sending options
- Surface mail
- Airsure®
- International Signed For™
- Airmail
- International Parcels

**D Buy stamps online**

- Personalise stamps online
- Stamps and collecting
- Online Postage

**E Mailing guide**

- Compare sending options
- Weight and size guide
- Clear addressing
- Wrapping and packaging
- Restricted and prohibited goods
- Sending cash
- Customs information
- Delivery exceptions
- Articles for the Blind
- Overseas clear addressing

**SECTION 2.**

You should spend about 20 minutes on Questions 15-27, which are based on the two texts below.

**Questions 15-20**

The text on page 108 has six sections, A-F.

Choose the correct heading for sections A-F from the list of headings below. Write the correct number (i-viii) in boxes 15-20 on your Answer Sheet.

**List of Headings**

- i what to do if you have failed a driving test
- ii what to do if you want to drive something bigger than a car
- iii what to do if you have any physical problems driving
- iv what to do if you are only visiting the country for a short time
- v what to do if you are going to stay and live in the country
- vi what to do if you come from a country outside Europe
- vii what to do if you are a professional driver
- viii what to do if you want to get a UK driving licence

15 Section A

16 Section B

17 Section C

18 Section D

19 Section E

20 Section F

### **Driving in the UK**

#### **Advice to drivers from countries within the European Community and European Economic Area**

**Section A.** If you hold a valid Community driving licence and are coming to the UK for a limited period, you can drive any vehicle if the full entitlement for that vehicle is shown on the licence.

**Section B.** If you are coming to live in the UK for a longer period, a valid Community licence issued on the strength of a driving test within the EC/EEA will allow you to drive in GB for a set period.

While your licence remains valid, you may drive in the UK:

- until aged 70 or for three years after becoming resident, whichever is the longer period
- until aged 45 or for five years after becoming resident, whichever is the longer period
- if you are aged over 45 (but under 65) until your 66th birthday or for five years after becoming resident, whichever is the shorter period
- if you are aged 65 or over for 12 months after becoming resident

In order to continue driving after these periods, you must get a British driving licence.

**Section C.** You must tell the DVLA about relevant conditions or disabilities that existed before you came to the UK and which you may have already notified to the authorities. This also includes any conditions you have recently become aware of. In most cases, the rules will be the same as those in other EC/EEA countries although there may be some differences. Higher visual standards apply for vocational drivers in this country.

**Section D.** If you want to take a British driving test, you must be a resident in the UK. However, if you have moved to the UK, having recently been a permanent resident in another state of the EC/EEA, you must be a resident in the UK for 185 days in the 12 months before your application for a driving test and full licence. To take a UK driving test you will need to either:

- apply for a UK counterpart licence (D58/2) by completing a D9 enclosing your Community driving licence, or
- exchange your community licence for the British equivalent and request the appropriate provisional entitlement

A provisional licence document is issued free of charge. However, the appropriate fee must be paid and your Community licence surrendered in exchange for a UK one when claiming the full entitlement.

**Section E.** Community licence holders with category B entitlement can also drive certain vehicles in the UK which are exempt from the normal large vehicle driver licensing requirements. These include non-commercial minibuses driven on a voluntary basis, permit minibuses and large vehicles such as agricultural motor vehicles and road construction vehicles. Further details about these vehicles and the conditions that apply to them can be found in the fact sheet 'Special Licensing Arrangements For Drivers of Large Vehicles' available from the DVLA.

#### **Section F**

If you drive a coach or lorry as your job, you can exchange your non-UK driving licence for a UK one, but it might affect your Driver Certificate of Professional Competence (CPC). Find out what rules apply if you exchange your driving licence while you have Driver CPC or if you want to get it.

**Questions 21-27**

*Read the text below and answer questions 21-27.*

**The Driving Test**

A driving test in Britain is made up of a theory test and a practical test. You cannot normally take the practical test without first having passed the theory test. You pay a fee for each part of the test - for details, see under heading Fees. Before you can apply for a test, you must have a valid Great Britain or Northern Ireland provisional driving licence.

**The Theory Test**

The theory test is in two parts. The first is a computerised touch screen test in which you have to select the correct answer from a number of choices. The second part is called the hazard perception test. You will be shown a set of video clips of driving hazards and asked to click the mouse button as soon as you spot a hazard. You have to pass both parts of the theory test at the same sitting in order to pass.

**The Practical Test**

The practical test will test your ability to exercise adequate control of your vehicle and normally lasts 40 minutes. If you have a physical disability you will be asked to demonstrate any special controls on your vehicle. The practical test also includes two questions on vehicle safety designed to make sure that you know how to check the safety of your vehicle. Topics covered are tyres, brakes, fluids, lights, reflectors, direction indicators and horns. If you fail, or do not take the practical test within two years of having passed the theory test, you will have to pass the theory test again before you can apply for a practical test. When you have passed the practical test, if you have a photocard provisional licence and your personal details have not changed, you can hand it over to the examiner, and a full licence will be issued to you automatically. Otherwise, you must apply to the Driver and Vehicle Licensing Agency (DVLA) for your full licence within two years of the test date. If you don't do this, you will have to take the practical test (and the theory test) again.

**Probationary Period**

When you pass your driving test for the first time, you will be subject to a two-year probationary period. This applies to anyone driving on a licence issued by the DVLA. The two-year period begins on the day you first pass the practical test. If during the probationary period you are convicted of driving offences for which six or more penalty points are awarded, your driving licence will be revoked. If your full driving licence is revoked, you will revert to learner status and be treated as if you never passed a driving test. To continue driving, you will have to get a provisional driving licence and drive with learner's plates until you have passed both the theory and practical parts of the driving test.

**Questions 21-27**

*Complete the notes below. Choose NO MORE THAN THREE WORDS AND/OR A NUMBER from the text for each answer. Write your answers in boxes 21-27 on your answer sheet.*

**The Driving Test**

There are two parts to the test.

You have to take the 21\_\_\_\_\_ first.

**The Theory Test**

In the first part, you have to answer questions on a 22\_\_\_\_\_

In the second part, you watch some 23\_\_\_\_\_ of the problems drivers face.

**The Practical Test**

The test takes 24\_\_\_\_\_ to complete.

You are asked about 25\_\_\_\_\_ during the test.

If you pass the test, give your 26\_\_\_\_\_ to the examiner.

**Probationary Period**

This lasts for two years. You lose your licence if you get six or more penalty points for 27\_\_\_\_\_

### **SECTION 3.**

You should spend about 20 minutes on Questions 28–40 which are based on the text below.

#### **THE HISTORY OF BADMINTON**

Badminton is a racquet sport in which two or four players hit an object called a shuttlecock backwards and forwards across a high net. Some people regard it as the oldest racquet sport in the world, although the earliest forms of the sport probably didn't use a racquet, and the net is a relatively recent innovation.

A shuttlecock is a lightweight ball made of cork, with feathers attached to it to help it fly. It is thought that shuttlecocks were first used about 2,500 years ago in China – although they were kicked rather than being hit with a racquet in those days. A racquet sport using shuttlecocks was certainly known in ancient Greece around 2,000 years ago, as well as in China and Japan, and a version of the game has been played by children across Asia for ever since. The aim was to keep hitting the shuttlecock backwards and forwards for as long as possible. The modern game we call badminton was developed in England, however, and not until the 19th century.

British soldiers learnt to play a game using shuttlecocks whilst serving in India from the middle of the 18th century onwards. When they came home, they brought the game with them. At this point, it was called Poona – named after a place in India – and from about 1860, it became popular in England. That's where a net was first introduced in 1867, and the modern system of scoring began to evolve, although there were lots of disagreements about the rules amongst the players, and no official organisation to govern the sport.

All this changed in 1887. The name 'badminton' was introduced after a famous party at a country house of that name in that year. At the party, a game was played that was very similar to the one we call badminton today. A set of modern rules was drawn up and published in 1893, and the Badminton Association of England was formed in 1895 to govern the new sport and organise championships. The first of these were held in 1899 and 1900, for men and women respectively. Badminton can be played by both men and women, although slightly different rules and scoring systems apply.

The new sport soon became very popular in England. By 1920, there were 300 badminton clubs in the country, and that figure had risen to 500 by 1930. At the same time, the sport was catching on in other countries too, and in 1934 an International Badminton Federation (IBF) was set up. The IBF decided to run international championships in 1939, but because of the second world war, the first one didn't take place until 1948, and then only for men. The first international women's championships were held in 1957.

Badminton was first played at the Olympic Games in 1972, but only as a demonstration sport – there was no actual competition and no medal winners. Although this happened again in 1988, it was 1992 before badminton was played as a fully recognised Olympic sport – with the mixed doubles being added in 1996.

Badminton is now one of the most widely played sports in the world. It is one of the fastest racquet sports, with shuttlecocks travelling at up to 260 miles per hour in top competitions, and so is very exciting to watch as well as play.

**Questions 28-34**

*Complete the table below. Choose ONE NUMBER ONLY from the text for each answer. Write your answers in boxes 28-34 on your Answer Sheet.*

YEAR	EVENT
28 .....	The modern game was first played at Badminton House in England.
29 .....	The first written rules for the game called badminton became available.
30 .....	A national badminton organisation was formed in England.
31 .....	The first men's national championships were held in England.
32 .....	An international badminton organisation was formed.
33 .....	The first international competition for women was held.
34 .....	Badminton became an official Olympic sport.

**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 People in China used to kick shuttlecocks to each other.  
36 The shuttlecock was invented in Greece.  
37 The badminton net was first used in India.  
38 Women's badminton has the same rules as men's badminton.  
39 Men and women can play against each other in the Olympic games.  
40 A shuttlecock can travel faster than a tennis ball.

## WRITING

### WRITING TASK 1

You should spend about 20 minutes on this task.

**People in your area are having problems with their internet connection.**

**Write a letter to the company which provides the connection. In your letter**

- describe the problems;**
- explain how they are affecting people**
- say what the company should do to help**

**You do not need to write any addresses.**

**Begin your letter like this:**

**Dear Sir or Madam,**

Write at least 150 words.

### WRITING TASK 2

You should spend about 40 minutes on this task. Write about this topic.

**People should work a fixed number of hours per week, and employers should not ask anybody to work more than this.**

Give reasons for your answer and include any relevant examples from your own knowledge or experience. Write at least 250 words.

**GENERAL TRAINING: READING AND  
WRITING TEST B**

## READING

### SECTION 1.

You should spend about 20 minutes on Questions 1-10, which are based on the text below.

#### **How to get a grant for scientific research**

In applying for a research grant, it's essential to start by identifying the appropriate granting body to contact for your proposal, as each body usually has its own particular priority areas. Once you've done this, check you can meet both the eligibility criteria and the deadline for the submission of applications. Your proposal should be written out in the format stipulated by your chosen organisation. Almost all granting bodies now have electronic application forms posted on the Internet, although these can sometimes be both complex and cumbersome. A grant request is generally broken down into the following components:

#### **Objectives**

Succinctly describe your research goal, and what you propose to do to achieve this. It's a good idea to propose only those objectives that you feel relatively confident of achieving within the grant period. A proposal with too many objectives to be included in a relatively short time is likely to be considered over-ambitious, and might well be rejected, even if it involves cutting-edge science or a revolutionary new idea.

#### **Background and rationale**

Introduce the problem that the research intends to address. The length of your description is dictated by the length limitations on the application form. You should cover what is already known about the problem in the scientific literature, and highlight the major gaps or limitations in the current knowledge base. The final paragraph should state precisely what you will have achieved if the project succeeds, and the likely impact of a successful research project. In addition, many application forms, even for basic research grants, now have a section in which you're required to describe how the research is likely to contribute to economic development.

#### **Experimental design and method**

You must describe in detail exactly what you're going to do to achieve your stated objectives. You should provide sufficient details to enable the review panel to critically evaluate your project. In particular, you must show how the experimental design will answer the questions that you're setting out to address; poor experimental design is the downfall of many applications.

#### **Critical appraisal and limitations of the proposed approach**

Describe the possible limitations of your proposed approach. For example, one of your proposed methodologies may have certain disadvantages that could impact adversely on your findings. A reviewer will certainly point this out and might find it sufficient grounds for rejecting your proposal. To meet such concerns, you should therefore state clearly that you're aware of the limitations of your approach, and if possible propose an alternative strategy if your first approach fails to deliver. You should also describe briefly any particular strengths of your laboratory likely to contribute to the success of the project if it is funded.

### **Questions 1-10**

*Do the following statements agree with the information given in the text?*

*In boxes 1-10 on your answer sheet, write*

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

- 1 Find the granting body which is best suited to the type of research you want to do.
- 2 Find out the date by which proposals must be sent in.
- 3 It's a good idea to lay out your proposal in an imaginative way.
- 4 Your proposal should have a long-term aim that extends beyond the timescale of the grant.
- 5 Make sure you fill all available space on the application form.
- 6 Your application should refer to other work already carried out on your topic.
- 7 It's essential to say how your research is relevant to economic and social issues.
- 8 The review panel may contact you with questions about your experimental design.
- 9 It's better to be honest if you have any doubts about aspects of your proposal.
- 10 You should give a full description of any laboratory facilities available to you.

### **Questions 11-16**

*The text on page 107 has six sections, A-F. Choose the correct heading for sections A-F from the list of headings below. Write the correct number (i-ix) in boxes 11-16 on your Answer Sheet.*

#### **List of Headings**

i Research experience	11 Section A .....
ii Laboratory investigations	12 Section B .....
iii Preliminary data	13 Section C .....
iv Background reading	14 Section D .....
v Description of the study area	15 Section E .....
vi Data analysis	16 Section F .....
vii Subject recruitment	
viii Collaboration	
ix Data collection	

#### **Experimental design and methods**

Within this section of your research proposal, there should be several sub-sections, some of which are required for all types of grants, others of which are dependent on the topic of the research.

A Granting bodies like to see a concise description of the results of any work you have already carried out towards the research. Focus on the results that suggest that the proposed work will probably succeed.

B If the proposed research involves field studies, your application should include latitude and longitude, elevation, vegetation, rivers, rainy and dry seasons, mean rainfall and temperatures, and distance from the capital city.

C Describe how you plan to find people to take part in experiments and what criteria you will use for including or excluding particular individuals. Most importantly, include how

you will obtain informed consent from these people, and which national authority or authorities have given ethical approval for your research.

D It is important to provide sufficient detail in this section for the reviewer to agree that the proposed work is feasible. There is no need to go into a lot of detail if the laboratory procedures that you plan to use are standard and widely described in scientific literature. However, you must still provide some details of your proposed procedures. Make sure you include a brief description of the various analytical techniques that you will carry out.

E This should include how it will be entered into a computerised database and what software will be used. In the case of trials, you should include how various variables, either continuous or discrete, will be compared among different groups studied using a variety of statistical methods, and how you intend to control for confounding variables.

F It is important to identify the partners with whom you intend to work, either in your own country or overseas. The choice of research partner or partners is crucial for your research project. They should provide complementary, rather than identical, expertise and/or facilities, and it must be clear how their presence will strengthen your proposal.

## **SECTION 2**

You should spend about 20 minutes on Questions 17-27, which are based on the text below.

### **The world's oldest mattress**

A study published in Science by Lyn Wadley of the University of Witwatersrand and her colleagues throws new light on the behaviour of early man in South Africa. The focus of the research is a cave in a natural rock shelter called Sibudu, situated in a sandstone cliff, 40 kilometres north of Durban. Dr Wadley has found evidence for at least 15 separate occasions when it acted as a home, with periods in between when it was abandoned, as is often the case with such shelters. Each occupation left debris behind, though, and as this accumulated, the cave floor gradually rose. All told, these layers reveal occupation over a period of about 40,000 years. Among the things Dr Wadley's team found in the floor of the cave was evidence of mat making throughout the period of habitation. The oldest stratum, dating from 77,000 years ago, predate other known instances of plant matting by approximately 50,000 years. They consisted of compacted stems and leaves of plants stacked in layers within a chunk of sediment three metres thick.

The inhabitants would have collected the plant matter from along the river, located directly below the site, and laid the plants on the floor of the shelter,' said Wadley. The lower part of these layers, compressed to a thickness of about a centimetre, consists of sedges, rushes and grasses. The upper part, just under a millimetre thick, is made of leaves from *Cryptocarya woodii*, a tree whose foliage contains chemicals that kill biting insects. Dr Wadley thus thinks that what she has found are mattresses on which the inhabitants slept, although they may also have walked and worked on them.

The upshot is another piece of evidence of how, around this period, humans were creating a range of hitherto unknown artefacts. Adhesives, arrows, needles, ochre-decorated pictograms and necklaces made from shells are all contemporary with Dr Wadley's finds, and stone tools became more delicate and sophisticated during this period. Indeed, given the age of the mats and other artefacts at the site, it's clear that *Homo sapiens* was the hominid who slept in the cave. The earliest hominids had very different sleeping accommodations. Even though they had evolved an efficient way to walk on the

ground, hominids such as Australopithecus were still small, not much bigger than a chimpanzee. They probably settled in trees at night, for if they slept on the ground, they would have been vulnerable to nocturnal predators looking for a midnight meal. The fossils of early hominids indicate this was possible; they still retained features useful for climbing, such as curved fingers and long arms. Once in the trees, they probably built nests of branches, twigs and leaves, just as chimpanzees do today.

The first hominid to try the ground as a bed might have been Homo erectus, starting almost two million years ago. Richard Wrangham, a biological anthropologist at Harvard University, suggests that once hominids learned how to control fire they discovered they could sleep on the ground while the flames kept predators away. It was also useful for cooking and processing foods, allowing Homo erectus to expand its diet. Adaptations for arboreal life were eventually lost, and Homo erectus became bigger and taller, the first hominid with a more modern body plan. Although there's no evidence in the paleontological record that hints at what type of bedding Homo erectus used, modern humans were certainly not the only hominids to construct 'mattresses'. Neanderthals were also building grass beds, based on evidence from a cave site in Spain dating to between 53,000 and 39,000 years ago.

### **Questions 17-19**

**Choose the correct letter, A, B, C or D. Write your answers in boxes 17-19 on your Answer Sheet.**

- 17 Dr Wadley believes that the cave at Sibudu was lived in  
A continuously over many thousands of years.  
B on a surprising number of different occasions.  
C intermittently during a long period of pre-history.  
D at times when other dwellings had to be abandoned.

- 18 Why is the evidence of mat making at Sibudu particularly significant?  
A It reflects findings in similar caves elsewhere.  
B It's older than other examples of similar craft skills.  
C It proves that the caves were actually once inhabited.  
D It helps establish the period when the caves were in use.

- 19 What leads Dr Wadley to think that the mats were used for sleeping?  
A one of the materials from which they were made  
B the thickness of the strata that were created  
C the use of plant matter collected nearby  
D the fact they were constructed in layers

**Questions 20-22**

*What other artefacts from the same period as Sibudu are mentioned in the text? Write the correct three letters A-G in boxes 20-22 on your answer sheet.*

- |                      |                           |
|----------------------|---------------------------|
| A illustrations      | E fastenings for clothing |
| B building materials | F cooking equipment       |
| C weapons            | G cleaning materials      |
| D sewing equipment   |                           |
- 20 \_\_\_\_\_  
21 \_\_\_\_\_  
22 \_\_\_\_\_

**Questions 23-27**

*Complete the sentences below. Choose NO MORE THAN TWO WORDS from the passage for each answer. Write your answers in boxes 23-27 on your Answer Sheet.*

- Australopithecus probably used 23 \_\_\_\_\_ as places to sleep.  
Early hominids had physical features that suggest they were good at 24 \_\_\_\_\_.  
Early hominids may have constructed nests similar to those made by 25 \_\_\_\_\_.  
Homo erectus used \_\_\_\_\_ for protection whilst sleeping.  
Neanderthals may have used 27 \_\_\_\_\_ to make a surface to sleep on.

**SECTION 3.**

You should spend about 20 minutes on Questions 28-40, which are based on the text below.

**BRIGHT LIGHTS, BUG CITY**

In the heart of Africa's savannah, there is a city built entirely from natural, biodegradable materials, and it's a model of sustainable development. Its curved walls, graceful arches and towers are rather beautiful too. It's no human city, of course. It's a termite mound. Unlike termites and other nest-building insects, humans pay little attention to making buildings fit for their environments. As we wake up to climate change and resource depletion, though, interest in how insects manage their built environments is growing, and we have a lot to learn. 'The building mechanisms and the design principles that make the properties of insect nests possible aren't well understood,' says Guy Theraulaz of the Research Centre on Animal Cognition in France. That's not for want of trying. Research into termite mounds kicked off in the 1960s, when Swiss entomologist Martin Liischer made groundbreaking studies of nests created by termites of the genus *Macrotermes* on the plains of southern Africa.

It was Liischer who suggested the chaotic-looking mounds were in fact exquisitely engineered eco-constructions. Specifically, he proposed an intimate connection between how the mounds are built and

what the termites eat. Macrotermes species live on cellulose, a constituent of plant matter that humans can't digest. In fact, neither can termites. They get round this by cultivating gardens for fungi, which can turn it into digestible nutrients. These areas must be well ventilated, their temperature and humidity closely controlled - no mean feat in the tropical climates in which termites live. In Liischer's theory, heat from the fungi's metabolism and the termites' bodies causes stagnant air, laden with carbon dioxide, to rise up a central chimney. From there it fans out through the porous walls of the mound, while new air is sucked in at the base.

This simple and appealing idea spawned at least one artificial imitation: the Eastgate Centre in Harare, Zimbabwe, designed by architect Mick Pearce, which boasts a termite-inspired ventilation and cooling system. It turns out, however, that few if any termite mounds work this way. Scott Turner, a termite expert at The State University of New York, and Rupert Soar of Freeform Engineering in Nottingham, UK, looked into the design principles of Macrotermes mounds in Namibia. They found that the mounds' walls are warmer than the central nest, which rules out the kind of buoyant outward flow of CO<sub>2</sub>-rich air proposed by Liischer. Indeed, injecting a tracer gas into the mound showed little evidence of steady, convective air circulation. Turner and Soar believe that termite mounds instead tap turbulence in the gusts of wind that hit them. A single breath of wind contains small eddies and currents that vary in speed and direction with different frequencies. The outer walls of the mounds are built to allow only eddies changing with low frequencies to penetrate deep within them. As the range of frequencies in the wind changes from gust to gust, the boundary between the stale air in the nest and the fresh air from outside moves about within the mounds' walls, allowing the two bodies of air to be exchanged. In essence, the mound functions as a giant lung.

This is very different to the way ventilation works in modern human buildings, where fresh air is blown in through vents to flush stale air out. Turner thinks there's something to be gleaned from the termites' approach. 'We could turn the whole idea of the wall on its head,' he says. 'We shouldn't think of walls as barriers to stop the outside getting in, but rather design them as adaptive, porous interfaces that regulate the exchange of heat and air between the inside and outside. Instead of opening a window to let fresh air in, it would be the wall that does it, but carefully filtered and managed the way termite mounds do it.'

Turner's ideas were among many discussed at a workshop on insect architecture organised by Theraulaz in Venice, Italy, last year. It aimed to pool understanding from a range of disciplines, from experts in insect behaviour to practising architects. 'Some real points of contact began to emerge/ says Turner. 'There was a prevailing idea among the biologists that architects could learn much from us. I think the opposite is also true.' One theme was just how proficient termites are at adapting their buildings to local conditions. Termites in very hot climates, for example, embed their mounds deep in the soil - a hugely effective way of regulating temperature. 'As we come to understand more, it opens up a vast universe of new bio-inspired design principles,' says Turner. Such approaches are the opposite of modern human ideas of design and control, in which a central blueprint is laid down in advance by an architect and rigidly stuck to. But Turner thinks we could find ourselves adopting a more insect-like approach as technological advances make it feasible.

#### Questions 28-34

*Complete the notes below. Choose NO MORE THAN THREE WORDS AND/OR A NUMBER from the text for each answer. Write your answers in boxes 28-34 on your Answer Sheet.*

**Liischer's model of Macrotermes mounds:**

- Termites rely on 28 \_\_\_\_\_ as their source of food.
- Termites create areas of fungi called 29 \_\_\_\_\_.
- The fungi produce \_\_\_\_\_ for the termites.
- Both fungi and termites produce 31 \_\_\_\_\_ and stale air.
- Stale air goes up a structure called the 32 \_\_\_\_\_.
- Carbon dioxide escapes through the walls of the mound.
- Fresh air then enters at the 33 \_\_\_\_\_ of the mound.
- , The whole process provides ventilation for the fungi, and manages both the 34 \_\_\_\_\_ and temperature of their area.

**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 Pearce's design in Zimbabwe was an attempt to put Liischer's ideas into practice.

36 Turner and Soar's research disproved Liischer's theory

37 Turner and Soar built a model termite mound to test their ideas.

38 Turner likens the mechanism for changing the air in the mound to an organ in the human body.

39 Turner thinks it unlikely that the termites' way of ventilating their mounds would work in a human building.

40 Turner believes that biologists have little to learn from architects.

## WRITING

### WRITING TASK 1

You should spend about 20 minutes on this task.

**You have recently gone to live in a new city.**

**Write a letter to your English-speaking friend. In your letter**

**• explain why you have gone to live in the new city**

**• describe the place where you are living**

**• invite your friend to come and see you**

**You do not need to write any addresses.**

**Begin your letter like this:**

**Dear Anna,**

Write at least 150 words.

### WRITING TASK 2

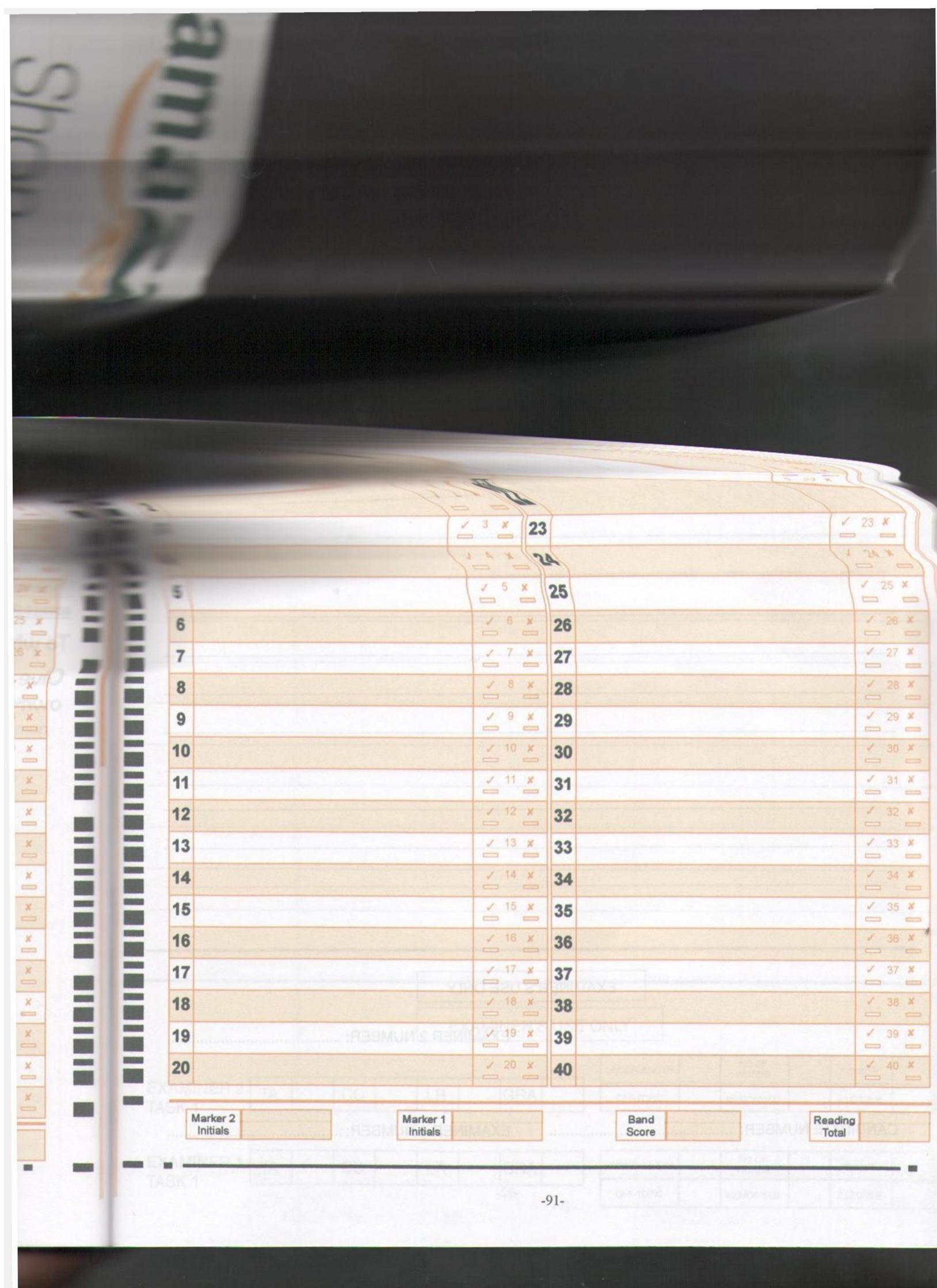
You should spend about 40 minutes on this task. Write about this topic.

**The ownership of cars should be restricted to one per family in order to reduce traffic congestion and pollution.**

To what extent do you agree or disagree?

Give reasons for your answer and include any relevant examples from your own knowledge or experience. Write at least 250 words.

  																																																																																																																																																																																																																																																												
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INTERNATIONAL ENGLISH LANGUAGE TESTING SYSTEM



BRITISH  
COUNCIL



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IELTS AUSTRALIA



UNIVERSITY of CAMBRIDGE  
ESOL Examinations

WRITING ANSWER BOOKLET

Candidate Name: ..... Candidate Number: .....

Centre Number: ..... Date: .....

Module: ACADEMIC  GENERAL TRAINING  (Tick as appropriate)

**TASK 1**

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EXAMINER'S USE ONLY

EXAMINER 2 NUMBER: .....

CANDIDATE NUMBER: ..... EXAMINER 1 NUMBER: .....

- 2 -

EXAMINER'S USE ONLY

EXAMINER 2  
TASK 1

TA		CC		LR		GRA
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UNDERLENGTH		NO OF WORDS		PENALTY	
OFF-TOPIC		MEMORISED		ILLEGIBLE	

EXAMINER 1  
TASK 1

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UNDERLENGTH		NO OF WORDS		PENALTY	
OFF-TOPIC		MEMORISED		ILLEGIBLE	

## TASK 2

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EXAMINER'S USE ONLY

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EXAMINER'S USE ONLY

EXAMINER 2  
TASK 2

TR		CC		LR		GRA
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UNDERLENGTH	NO OF WORDS	PENALTY	
OFF-TOPIC	MEMORISED	ILLEGIBLE	

EXAMINER 1  
TASK 2

TR		CC		LR		GRA
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UNDERLENGTH		NO OF WORDS		PENALTY

**Cambridge  
IELTS 10**

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ESOL Examinations

**READING ANSWER KEYS**

	A.M. TEST 1	A.M. TEST 2	A.M. TEST 3	A.M. TEST 4	G.T.M. TEST 1	G.T.M. TEST 2
01	FALSE	VI	HUNDRED	FALSE	F	TRUE
02	TRUE	II	PEDALS	TRUE	D	TRUE
03	TRUE	III	TOYS	NOT GIVEN	E	FALSE
04	NOT GIVEN	VII	OVERSEAS	FALSE	F	FALSE
05	A LIFETIME	V	HOLLOW STEEL TUBES	FALSE	C	NOT GIVEN
06	\$1.6 MILLION	FALSE	AXLE	B	B	TRUE
07	BACHELOR'S DEGREE HOLDER	TRUE	FALSE	F	E	FALSE
08	8,655	TRUE	TRUE	G	C	NOT GIVEN
09	TUITION	FALSE	NOT GIVEN	D	E	TRUE
10	C	NOT GIVEN	TRUE	VII	E	FALSE
11	D	B	SIZE	III	A	III
12	E	D	FOOT, LEVERS	VI	B	V
13	G	H	CHAIN	IX	D	VII
14	WATCHED TV	A	TRUE	II	E	II
15	VIOLENTLY	G	FALSE	G	IV	VI
16	6 MONTHS	F	NOT GIVEN	H	V	VIII
17	PARENTS	D	D	I	III	C
18	NUMBER OF HOURS	B	B	E	VIII	B
19	AVOIDED TV	E	D	A	II	A
20	LESS TV	C	ORDINARY	C	VII	A
21	FALSE	I	WHEELS	C	THEORY TEST	C
22	TRUE	K	PLATFORM	D	COMPUTERISE D TOUCH SCREEN	D
23	NOT GIVEN	C	BATTERIES	B, C, E	VIDEO CLIPS	TREE
24	NOT GIVEN	E	POLICE OFFICERS	NOT GIVEN	FORTY MINUTES	CLIMBING
25	D	G	AGE, INJURY	TRUE	VEHICLE SAFETY	CHIMPANZEES
26	B	A	FEAR	FALSE	PHOTOCARD PROVISIONAL LICENCE	FIRE
27	III	H	MIND-SET	TRUE	DRIVING OFFENCES	GRASS
28	II	F	I	FALSE	1887	CELLULOSE
29	VII	FALSE	D	B	1893	GARDENS
30	V	TRUE	G	E	1895	NUTRIENTS
31	B	TRUE	C	F	1899	HEAT
32	A	NOT GIVEN	E	G	1934	CHIMNEY
33	ON BOTTOMFISH	TRUE	A	CLEANER INDUSTRIAL PRODUCTION	1957	BASE
34	SMALLER	FALSE	D	ECONOMIC PROSPERITY	1992	HUMIDITY
35	POLLUTION	D	B	ENVIRONMENT AL EFFECTS	TRUE	TRUE
36	POPULAR	B	C	4	FALSE	TRUE
37	NUMEROUS BOATS/VESSELS	H	A	7	FALSE	NOT GIVEN
38	QUIET	F	E	1	FALSE	TRUE
39	EXHAUST FUMES	A	C	8	TRUE	FALSE
40	COMMUNICATI NG	E	A	6	NOT GIVEN	FALSE

**Cambridge  
IELTS 10**

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ESOL Examinations

**LISTENING ANSWER KEYS**

	TEST 1	TEST 2	TEST 3	TEST 4
01	8:30	JUNE	FEBRUARY	KRAMER
02	REFERENCE BOOKS	KARLA	ONE	58
03	CHILDREN'S BOOKS	257	WILSON	RESIDENTIAL
04	BE REPAIRED/REPAIR	VEGETARIAN	2336189872	OFFICE MANAGER
05	BE SOLD/SELL	B	C	637-555-9014
06	THURSDAY	A	F	NINE YEARS
07	(FAMILY) MOVIES	C	G	LONG DISTANCE
08	2:30	A	C	INTERNET
09	MEETING	D	A	FRIDAY
10	6:30	E	C	MORNING
11	A	B	18	B
12	B	E	9	C
13	D	A	HILL PARK	B
14	G	F	BAY BRIDGE	A
15	I	C	GREEN STREET	CLOWN
16	FILM/MOVIE	SWIMMING LESSONS	VIEW	CONCERT
17	DISCUSSION	TENNIS COMPETITION	BOATS	SINGING
18	LECTURES	PARTY/CLUB PARTY	EAT	INTERNATIONAL
19	GAMES	B	BASKETS	GAMES
20	DANCE	C	THEATER	CRAFTS
21	A	B	IN THREE WEEKS	UNIVERSITY CATALOG
22	C	C	A SHOPPING MALL	A SUMMARY
23	E	F	THIRTY	WORK SUPERVISOR
24	INTERVIEWS, JOURNAL ARTICLES	G	A GOVERNMENT STUDY	C
25	PHOTOS (OF BIRDS)	I	DESIGN THE QUESTIONNAIRE	A
26	B	1895	PROFESSOR S APPROVAL/APPROVAL FOR QUESTIONNAIRE	B
27	A	NEW WING	CONDUCT INTERVIEWS	A
28	B	LOCAL ARTISTS	ANALYZE THE RESULTS	C
29	C	ART HISTORY	CHARTS (SHOWING RESULTS)	B
30	A	CONCERTS/CONCERT SERIES	CLASS PRESENTATION	A
31	INDIVIDUAL REEFS/CORAL REEFS	C	ALCOTT WAS BORN.	FORESTED AREA
32	ISLANDS	C	SUPPORT HER FAMILY.	PLANT FOODS
33	CORAL(S)	B	HER FIRST NOVEL/THE INHERITANCE	INSECTS/FISH
34	A	A	1862	THE WINTER
35	D	A	AFTER HER WAR	TWENTY-FIVE YEARS
36	E	A (GARDENER'S) CALENDAR	1866	A
37	H	SERVED TOMATOES	1868	B
38	I	IN PUBLIC	MAY DIED.	B
39	RISING SEA TEMPERATURES	TOMATO RECIPE/ RECIPES	1882	A
40	SHADING THE REEF/SHADING CERTAIN AREAS	RAW TOMATOES	ALCOTT DIED.	A