READING PRACTICE

READING PASSAGE 1

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

The Truth About Global Warming

Claudia Cornwall

A

Eleven of the hottest years since 1850 occurred between 1995 and 2006. Last year, the United Nations Intergovernmental Panel on Climate Change (IPCC) reported that the earth was about 0.75°C warmer than it was in 1850. While this doesn't sound like a lot, a small difference in average temperature can make a big difference in climate. During the last ice age, for example, the planet was only about 5°C colder than now.

B

The IPCC has concluded that human activity is very likely responsible, by increasing the concentrations of greenhouse gases and thus the greenhouse effect. More than 25 scientific societies, including the national science academies of the G8 nations, have endorsed the conclusion. Some scientists, however, still disagree, arguing that human contribution is minimal.

C

The effect, explains Robert Charlson, a professor at the University of Washington, 'has been on the scientific books for over a century. It has been tested very thoroughly.' Certain gases cause the atmosphere to trap heat energy at the earth's surface. Without the greenhouse effect, the earth's average global temperature would be –18°C, rather than the present comfortable 14.6°C. The concern is with the enhanced greenhouse effect that humans cause – specifically, that it will heat the planet too much.

D

The main greenhouse gases (GHGs) are carbon dioxide (CO_2), methane, nitrous oxide, chlorofluorocarbons (CFCs) and water vapour. Except for CFCs, which are for commercial purposes, these gases are found in nature. Burning fossil fuels, trees and agricultural waste adds to the CO_2, methane and nitrous oxide, as do landfills, oil refineries and coalmines. And we affect water vapour indirectly, too. As the earth warms because other GHG levels increase, evaporation ramps up, creating more water vapour.

E

'CO_2 has increased 35 per cent since the beginning of the industrial era,' says Gavin Schmidt, a climatologist with NASA's Goddard Institute for Space Studies in New York. 'Methane has more than doubled. Nitrous oxide has gone up 17 per cent.'

LIVEWORKSHEETS

F

Scientists are particularly concerned about CO_2 because it is the most abundant of the gases that we affect directly. While we have stabilised our CFC and methane emissions, we have not done the same with CO_2 so far. The carbon dioxide in the atmosphere continues to rise by about 0.4 per cent a year – because the fossil fuels that produce it fill 85 per cent of our energy requirements.

G

According to NASA's Schmidt, 'CO_2 stays around for centuries.' Worldwide, we produce some 23.5 gigatonnes of CO_2 annually. (A gigatonne is a trillion kilograms.) Fortunately, only half of this amount stays in the atmosphere; natural systems absorb the rest. For instance, oceans, our largest repository of carbon dioxide, take in more than a quarter of our CO_2 emissions every year. They already hold about 50 times the amount in the atmosphere and ten times that in the land biosphere. But just how much more they can safely store is still not clear. In addition, forests and plants soak up less than a quarter of CO_2 emissions. Through photosynthesis, plants separate CO_2 into oxygen, which they emit, and carbon, which becomes part of their cells.

H

Climate change may also result from regular shifts in the orbit of the earth and the tilt of its axis changing how sunlight is distributed around the globe, and may explain why the ice ages came and went. These shifts take place slowly over hundreds of thousands of years.

I

Tiny particles pumped into the atmosphere by erupting volcanoes and industrial pollution reflect some solar energy back to space, with the effect of making things cooler. In 1991, Mount Pinatubo in the Philippines blew so much dust into the stratosphere that the temperature dropped by half a degree for two years.

J

Water in the form of vapour and clouds plays a role, but their impact is hard to predict. Water evaporating from warmer oceans creates clouds that can both trap heat and reflect it into space. 'Low clouds tend to cool the planet,' Professor Charlson says. 'High clouds warm it.'

K

Many researchers have concluded that natural forces alone do not explain the temperature increases over the past 30 or 40 years. Bruce Bauer, who studies ancient weather systems at the World Data Centre for Paleoclimatology in the US, says, 'When you try to do the maths, the only way you can calculate what's happening is to include the effects of artificial CO_2.'

L

The theory of heat-trapping gases projects that as CO_2 emissions go up, temperatures will rise in the lower atmosphere and at the surface of the earth. Thomas Karl, director of the National

LIVEWORKSHEETS

Oceanic and Atmospheric Administration's National Climatic Data Centre in the US, says, 'The evidence continues to support human impact on global temperature.'

M

According to the IPCC, by 2100 the average temperature might rise by as much as 5.8°C. But its report also says we could hold temperature increases to a more bearable two degrees above pre-industrial levels. Getting that result means halving current CO_2 emissions by 2050, which is achievable if we lower them by slightly over 1 per cent of current levels every year until then.

QUESTIONS 1–5

Reading Passage 1 has 13 paragraphs, ***A–M****.*
Which paragraph contains the following information?
Write the correct letter ***A–M*** *in boxes* ***1–5*** *on your answer sheet.*

1. Of all GHGs, methane has had the highest increase in the age of industrialisation.
2. The greenhouse effect prevents the earth's atmosphere from becoming too cold.
3. Nearly 50 per cent of CO_2 produced is dissipated in our natural environment.
4. There are contradictory opinions about the role of human beings in enhancing global warming.
5. The atmosphere surrounding us has all but one of the greenhouse gases present in it.

QUESTIONS 6–9

Answer the following questions using ***NO MORE THAN THREE WORDS*** *from the text.*
Write your answers in boxes ***6–9*** *on your answer sheet.*

6. How did scientific societies and science academies respond to the result reached by the IPCC?

   _____

7. What are chlorofluorocarbons used for?

   _____

8. What environmental effect did the eruption of Mount Pinatubo have that lasted until about 1993?

   _____

9. What forms of water cause the earth's temperature to rise or to fall?

   _____

LIVEWORKSHEETS

[continued from previous page]

QUESTIONS 10–13

*Complete each sentence with the correct ending **A–F** from the box below.*
*Write the correct letter **A–F** in boxes **10–13** on your answer sheet.*

10. According to Professor Robert Charlson

11. According to Bruce Bauer

12. According to Thomas Karl

13. According to the Intergovernmental Panel on Climate Change

A carbon dioxide remains for hundreds of years.
B one must take into account the effects of unnatural carbon dioxide.
C our planet is warmer than it was hundreds of years ago.
D the rise in the earth's temperature could be controlled.
E there is proof that global temperature has been affected by humans.
F science has known of the greenhouse effect for more than a hundred years.

READING PASSAGE 2

You should spend about 20 minutes on Questions 14–23, which are based on Reading Passage 2.

Unoriginal Sins

Victoria Laurie

Are we creating a generation of people unable to distinguish between an original idea and a borrowed one?

'Cyber-cheating' and 'cyber-shoplifting' are new words coined to describe the worldwide rise in plagiarism and abuse of copyright. Universities, in particular, are reeling from this new version of plain old academic dishonesty, with students copying entire slabs or essays with a click-and-drag motion, buying essays from cheat sites; or even paying people to write them. Jan Thomas, a pro-vice chancellor at Perth's Murdoch University, knows how easy it is to 'lift' information from the internet. On her desk is a 2000-word essay liberally highlighted with yellow markings. On a sheet beneath is the article the student cribbed from. His entire philosophy essay on friendship has been copied verbatim, with the exception of about 50 words. 'This student probably put "friendship" in the search engine and found a 1996 article about Aristotle's writing on achieving a good life,' says Thomas. 'But this is an extreme example.'

LIVEWORKSHEETS

All Murdoch University first-year students are given mandatory instruction on referencing and critiquing other sources. 'It's three strikes and you're out,' says Thomas. 'But you can be excluded from the university on the first occasion if the breach is severe enough.'

If she has suspicions, Thomas uses a search engine such as Google or Yahoo! to enter key phrases and find out if slabs of text have been lifted. But it's time-consuming. 'In a division of 500 students last year I saw five definite cases. It probably means we are missing about 50.' One of Thomas's colleagues in another department says she deals with 20 cases of plagiarism a semester. She says some students change every third word to avoid detection on search engines. One student even plagiarised her bibliography – detected when eight of the sources she cited were not stocked in the university library.

Plagiarism and cheating are, of course, not new – what is new is the fact offenders are being caught, says Thomas. 'I think we're more rigorous now.'

Current reliable figures on the incidence of plagiarism are surprisingly scarce, perhaps because universities are loath to reveal them. This is one of the reasons CAVAL, a university-owned information resources group, conducted its own investigation last year on behalf of six Victorian universities. It checked nearly 2000 essays over 20 subjects using a new plagiarism-detection program called Turnitin.com, which can scan 2.6 billion journals for matching text. Plagiarised parts of an essay are highlighted in red and the original source displayed.

Research leader Steve O'Connor says one in eight students was found to have copied 25 per cent or more of an essay from the internet. But he believes this is just the tip of the iceberg and estimates as many as 500,000 essays a year could contain some plagiarism. Adding to the problem are a host of new websites such as 'School Sucks', 'Other People's Papers' and 'The Evil House of Cheat', which offer downloadable university papers and essays.

Dr Garry Allan, director of information technology at RMIT, says plagiarism 'needs to be addressed within the framework of academic integrity. [The problem is] social values and nature of learning are lagging behind technology.' Allan floats an intriguing idea: one day every computer user in the world may find themselves pressing an 'originality check' button on their keyboard. 'At the moment you have a spellchecker in your word processor. In the future you'll have an originality checking button and when you press it, it will underline in a particular colour all the text strings that are not identifiably original,' says Allan.

LIVEWORKSHEETS

QUESTIONS 14–17

Do the following statements agree with the information given in Reading Passage 1?
*In boxes **14–17** 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*

14. Students fail to differentiate between an original idea and a borrowed idea.

15. There are two new terms to describe the ways copyright is breached.

16. Worldwide increase in the incidence of academic dishonesty is related to an increase in the use of computers.

17. Academic dishonesty includes cheat sites buying essays.

QUESTIONS 18–23

Using information in the reading passage, match each of the following actions with the purpose it was meant to achieve.
*Write the appropriate letters **A–G** in boxes **18–23**. There are more letters than you will need.*

ACTION	PURPOSE
18 ... giving mandatory instruction on referencing	**A** To access downloadable material as university assignment
19 ... using search engines to enter key phrases	**B** To prevent students from failing to give the source of their information
20 ... changing every third word	**C** To detect which parts of a student's essay have been copied
21 ... using the program Turnitin.com	**D** To detect if chunks of text have been copied from another source
22 ... using websites like 'School Sucks'	**E** To avoid detection of one's essay as a copied essay on search engines
23 ... paying others to write essays or buying essays from certain websites	**F** To avoid giving true figures on the incidences of plagiarism
	G To earn good scores without making the expected effort as a learner

LIVEWORKSHEETS

READING PASSAGE 3

*You should spend about 20 minutes on Questions **24–40**, which are based on Reading Passage 3.*

The Eccentric Engineer

Justin Pollard

Genetic engineering gets a bad press with talk of 'playing God' and 'Frankenstein foods'. But in truth this had always been an area of engineering where precautionary principle has held sway that, in the absence of scientific consensus, the burden of proof lies in showing that an intended action is not harmful. This is largely thanks to one man.

In early 1971 Paul Berg and his team at Stanford University in California were working at the very edges of biological science. Following the pioneering work of Crick and Watson identifying the DNA helix, they were now looking at ways of splicing together sections of DNA from different organisms and then using a virus to inject the resulting genome into a living cell – a technique known today as Recombinant DNA (rDNA). This held out the prospect of identifying the effects of genes and perhaps later taking particular beneficial genes from one creature and inserting them into another. During the 1960s a lot of work had been done using the bacterium every handwash manufacturer loves to hate, E. Coli, and the virus 'lambda' which infects it. What had not been attempted was expanding this research into studying mammalian cells and the viruses that might be used to insert new genetic material into them. In the early 1970s, Berg wondered whether it might be possible to use the Simian Virus 40 (SV40) to carry novel DNA sequences into mammalian cells.

The problem with SV40 was that it was tiny – only 5000 base pairs long, encoding just five genes – so he realised he would have to tinker with it to enable it to pick up other genes and carry them into a living cell. To achieve this he decided to try to splice together SV40 DNA with a DNA fragment that could replicate independently a cell's genome (a plasmid) constructed from his old friend the lambda virus and three E. Coli genes. This recombinant DNA would then be inserted into living E. Coli cells.

Explaining this development to other pioneering genetic engineers at the Cold Spring Harbor Laboratory Tumor Virus Workshop, Long Island, in 1971, Berg's research assistant Janet Metz gained a reaction she was perhaps not expecting. Microbiologist Robert Pollack observed that the agent they were using, SV40, was a tumour-causing virus, which they had now given the ability to splice itself into the genome of E. Coli. E. Coli was, in turn, a very common bacterium resident in the human intestine. In an urgent call to Berg, Pollack asked: 'What if the E. Coli in your lab escaped into the environment and into people? It would be a real disaster if one of the agents now being handled in research should in fact be a real human cancer agent.' Could they have created a Frankenstein bacterium – a common human parasite now with the deadly ability to spread a cancer plague?

The deadly possibilities of recombinant DNA had suddenly become clear: so what was to be done? Concerned that Pollack was over-reacting, Berg canvassed more opinion. Many argued that the work was so vital that risks were worthwhile, others that it was a matter of ethics. One group claimed that the technique posed no particular threat and that 'over-regulating' research would be more dangerous.

LIVEWORKSHEETS

It was a delicate situation. The first steps of Berg's work had been completed; the rDNA had been painstakingly created. All that remained was to insert it into a living cell. But what would result? A miracle or a monster or just something interesting in between? With the certainty that executing the last step in the experiment would be Nobel-worthy stuff, many would have carried on regardless, leaving the theoretical problems for others, but Berg chose not to. On 26 July 1974 he published an open letter in *Science* calling for a voluntary moratorium on some areas of rDNA research (including his own) until the risks were better understood.

This was followed up the next year at the Conference on Biohazards in Biological Research. Here genetic engineers openly discussed the possible outcomes of their research, bringing the subject to public and government attention and leading to the laying down of strict guidelines on the creation and use of rDNA. In the meantime another team had successfully spliced a gene from a toad into an E. Coli bacterium, effectively stealing Berg's thunder.

But Berg's insistence on being an ethical engineer did bear fruit, ushering in a new era of openness in science. Far from restricting research, it also brought the ideas and terminology of genetic engineering into the public domain where they belong.

QUESTION 24

*Choose the correct letter: **A**, **B**, **C** or **D**. Write the correct letter in box **24** on your answer sheet.*

24. The reading passage highlights which particular aspect of Paul Berg as a scientist?

- **A** that he was a genetic engineer
- **B** that he created a new recombinant DNA
- **C** that he acted in an ethical manner instead of in his own interest
- **D** that he sought the opinion of other scientists on the possible outcomes of his research.

QUESTIONS 25–28

Complete the following table outlining various research-related works or programs mentioned in the reading passage, using words and phrases from the box on the next page.
*Write the appropriate letters **A–H** of your answers in boxes **25–28** on your answer sheet.*

Year/date	Scientist/researcher	Research on/work on
25 ...		E. Coli and the virus 'lambda'
	Watson and Crick	DNA helix identified
Early 1970s	Paul Berg and team	**26** ...
27 ...	**28** ...	Voluntary moratorium on rDNA research

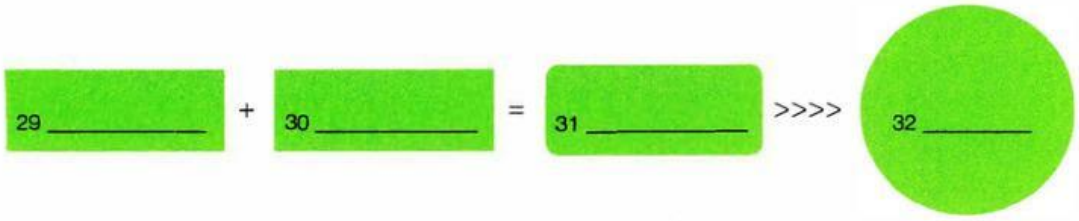
LIVEWORKSHEETS

A 1960s
B 1970s
C 1974
D Janet Metz
E Paul Berg
F Watson and Crick
G Robert Pollack
H Simian Virus 40 (SV40)
I A gene from a toad spliced into E. Coli

QUESTIONS 29–32

Label the parts of the diagram illustrating a process described in the reading passage.
Choose your labels from the box below the diagram.
*Write your answers in boxes **29–32** on your answer sheet.*

The process of forming a recombinant DNA (rDNA)



A The recipient living cell
B A section of DNA from organism A
C Injecting virus with genome
D A section of DNA from organism B
E Resulting genome within a virus

QUESTIONS 33–35

*Choose the correct letter: **A**, **B**, **C** or **D**. Write the correct letter in boxes **33–35** on your answer sheet.*

33. There were different responses when Paul Berg asked others how he should proceed with his research using Simian Virus 40 (SV40). Which of the following reactions from other scientists is not mentioned in the text?

A it was an ethical issue
B to continue his research even if it involved risks because it was an important study
C to stop his research as it was dangerous for him to work with cancer-causing agent
D to continue his research as there was no specific danger other than getting research too controlled.

LIVEWORKSHEETS

[continued from previous page]

34. What did Paul Berg eventually do after creating the new rDNA and after receiving different responses from other scientists?

A He continued his work using SV40 as he had planned.

B He stopped working as a scientist altogether.

C He started publishing articles on scientific topics.

D He temporarily stopped his work and asked others working in that area to do the same until the dangers involved in the work were clearer.

35. Which of these was NOT the outcome of what Paul Berg did in regard to his research with SV40?

A Genetic engineers openly discussed their research in a science conference.

B Genetic engineers wrote open letters in science journals.

C Strict rules were made about the making and using of rDNA.

D Berg lost a chance to win worldwide recognition for groundbreaking research.

QUESTIONS 36–40

*Using information in the reading passage, match each of the items in **List A** with the related information in **List B**.*
*Write appropriate letters in boxes **36–40**.*

List A	List B
36 ... E. Coli	**A** a DNA fragment able to replicate independently
37 ... SV40	**B** a bacterium infecting the human body
38 ... Lambda	**C** combining two strands of DNA
39 ... splicing	**D** a virus infecting a bacterium
40 ... a plasmid	**E** a tumour-causing virus

LIVEWORKSHEETS

LISTENING PRACTICE 1

Complete the notes below.
*Write **NO MORE THAN TWO WORDS AND/OR A NUMBER** for each answer.*

Saving the Planet

Approx. amount of money that each household could save a year: **1** US$ .....

Main topic of book: **2** .....

Ways to prevent global warming:

3 use modern types of .....
4 put your ..... in a cool place
5 turn off .....
6 only shower for .....
7 unplug your .....

type of energy saving	amount saved
• keeping tyres inflated	**8** US$ .....
• eating less **9**	US$109
• buying food in **10**	US$293

LIVEWORKSHEETS

LISTENING PRACTICE 2

13 SECTION 4 *Questions 31–40*

Questions 31–40

Complete the notes below.

Write ***NO MORE THAN THREE WORDS AND/OR A NUMBER*** *for each answer.*

Migration of early humans

- Movements of people – common occurrence through history
- First significant migration: from Africa about **31** ..... years ago
- Early pioneers did not survive
- Earth experienced changes in **32** ..... .
- About 70,000 years ago, departure of modern humans from Africa

Areas of colonisation

- China about 50,000 years ago
- Europe about **33** ..... years ago
- Open steppes of Siberia some 40,000 years ago
- Roughly 20,000 years ago arrival in Japan, then linked to the main **34** .....
- Australia reached across the sea on **35** ..... 50,000 years ago
- America via Alaska some time between 15 and 13,000 years ago

Migration within Africa

Bantu occupation of around **36** ..... of the African continent by 1,000 AD

Stimulus for the Bantu migration: perhaps the farming of the **37** .....

Population expansion led to movement into sparsely populated surrounding areas

Introduction of iron production from **38** .....

Use of iron tools by the Bantu to fell trees, clear forests and **39** .....

Iron gave the Bantu a **40** ..... over their neighbours

LIVEWORKSHEETS