

NAME	MARK
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**READING 1**

- 1 Why are longer flights potentially harmful to passengers and crew?
  - a. Because there isn't as much oxygen in the air.
  - b. People will get bored
  - c. Long periods of inactivity will damage their bones
- 2 What are flight socks?
  - a. special socks to keep the plane free of harmful bacteria
  - b. one of the preventive measures planned by airlines
  - c. socks that stop your blood getting too thin
- 3 Which of the following methods of countering the health problems caused by long flights is NOT mentioned?
  - a. how best to cope with jet lag
  - b. advice on food consumption during a flight
  - c. advice on drinking alcohol
- 4 What are the advantages of longer flights?
  - a. There are less problems with jet lag
  - b. passengers save time
  - c. passengers get a good break between flights
- 5 Where is the market for longer flights expected to develop?
  - a. between Europe and America
  - b. between Asia and America
  - c. between Asia and Europe

1.	2.	3.	4.	5.

**READING 2**

The text has nine paragraphs, A-I. Which paragraph contains the following information?

1. the public's reaction to the new theory
2. an ancient belief about the position of the earth
3. Copernicus's legacy to the future of science
4. How academics built on Copernican ideas
5. An idea which is attractive to humans
6. Out-dated teaching and defective research
7. Scientists suffer for their beliefs

1.	2.	3.	4.	5.	6.	7.

**READING 3**

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- 1 Which one of the statements is true?
  - a. Wind power has developed steadily since the 1970s.
  - b. Cost was a big factor in preventing the development of wind power
  - c. Wind power can provide enough electricity for the United States
  - d. Some US states are powered solely by wind
  
- 2 What is the general view of wind energy in the United States?
  - a. very positive
  - b. it can only provide small amounts of energy
  - c. very negative
  - d. it will reduce global warming
  
3. Which of these factors has not contributed to the reduced cost of wind energy?
  - a. state subsidies
  - b. economies of scale
  - c. standardisation of design
  - d. more efficient maintenance
  
4. Wind turbine designs ...
  - a. are expected to improve in the future
  - b. are already very good
  - c. will be much more efficient in the future
  - d. are good for the environment
  
5. Wind energy is more developed in Europe than the USA
  - true
  - false

1.	2.	3.	4.	5.

## **READING 1**

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Read the text about long-haul flights and answer the questions. Read the text and then answer questions 1-5.

### **Long-haul flights get longer**

Long-haul flights have just got longer, with a non-stop flight from Singapore to New York now in operation. But 18 hours in the air creates its own challenges. A lot of preparation goes into the ultra long haul flight. The aircraft is specifically designed for the journey with more space and extensive entertainment services. The flight crew are also specially trained.

The seasoned traveller is also more aware of the health risks associated with a flight that covers as much as 16,600-kilometers (10,310-miles) in distance. Exposure to lower oxygen levels for up to 18, maybe 20, hours is abnormal for the human body. With deep vein thrombosis (DVT) the problem really starts occurring after 12 hours (in-flight). This could lead to an increase in heart attacks.

Doctors believe prevention is better than cure when it comes to in-flight health. Passengers on ultra long range flights need to be provided with flight socks and, if necessary, tablets for thinning the blood. It is not just the health and vitality of the passenger that is at stake on a flight of this length, but also that of the flight crew. "They give us training on fatigue management and how to adjust to the local time in New York and to exercise, as well as take care our diet and eat lightly in-flight," says Linda Wu, a stewardess on Singapore Airlines.

However, passengers are trading in health concerns for convenience. An extra- long flight means passengers do not need to break up their journey and change planes. "They like to board once, de-plane once. It is saving time," says James Williams from Singapore Airlines.

"From Los Angeles to Singapore, passengers are saving two and a half hours. And to New York passengers are saving up to four hours in flying time." Thai Airways is also launching a non-stop service to New York from Bangkok next June to compete with Singapore Airlines. It is planning a similar service to Chicago. Cathay Pacific, Continental, Qantas and Emirates Airlines also offer flights that are more than 14 hours in duration. However, there is still a question of whether longer non-stop flights will become popular. "They will certainly have a role in the future of aviation, there is no doubt about it. People will prefer to fly non-stop if it is available," says Chris Johnson, an airline analyst. "But we are reaching the limits. These markets are at the very margin of aviation. Most airlines still fly in the eight to 12-hour sector. This is still where the biggest volume in traffic is." Avery believes that geography will determine the demand for the ultra long-haul flight and that worldwide appeal for this type of flight is unlikely. "Asia is where the demand is for the ultra long-haul flight. They are connecting Asian cities to the U.S. East Coast, which is the big market," he explains. "The routes that connect most places that European business travellers go do not need a capacity and endurance to fly 18-hours -- this is the same for U.S. carriers."

## **READING 2**

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This section has a reading passage about the earth and the universe and 7 questions.

### **The Shock of the Truth**

**A** Throughout history, there have been instances in which people have been unwilling to accept new theories, despite startling evidence. This was certainly the case when Copernicus published his theory - that the earth was not the centre of the universe.

**B** Until the early 16th century, western thinkers believed the theory put forward by Ptolemy, an Egyptian living in Alexandria in about 150 A.D. His theory, which was formulated by gathering and organizing the thoughts of the earlier thinkers, proposed that the universe was a closed space bounded by a spherical envelope beyond which there was nothing. The earth, according to Ptolemy, was a fixed and immobile mass, located at the centre of the universe. The sun and the stars, revolved around it.

**C** The theory appealed to human nature. Someone making casual observations as they looked into the sky might come to a similar conclusion. It also fed the human ego. Humans could believe that they were at the centre of God's universe, and the sun and stars were created for their benefit.

**D** Ptolemy's theory, was of course, incorrect, but at the time nobody contested it. European astronomers were more inclined to save face. Instead of proposing new ideas, they attempted to patch up and refine Ptolemy's flawed model. Students were taught using a book called The Sphere which had been written two hundred years previously. In short, astronomy failed to advance.

**E** In 1530, however, Mikolaj Kopernik, more commonly known as Copernicus, made an assertion which shook the world. He proposed that the earth turned on its axis once per day, and travelled around the sun once per year. Even when he made his discovery, he was reluctant to make it public, knowing how much his shocking revelations would disturb the church. However, George Rheticus, a German mathematics professor who had become Copernicus's student, convinced Copernicus to publish his ideas, even though Copernicus, a perfectionist, was never satisfied that his observations were complete.

**F** Copernicus's ideas went against all the political and religious beliefs of the time. Humans, it was believed, were made in God's image, and were superior to all creatures. The natural world had been created for humans to exploit. Copernicus's theories contradicted the ideas of all the powerful churchmen of the time. Even the famous playwright William Shakespeare feared the new theory, pronouncing that it would destroy social order and bring chaos to the world. However, Copernicus never had to suffer at the hands of those who disagreed with his theories. He died just after the work was published in 1543.

**G** However, the scientists who followed in Copernicus's footsteps bore the brunt of the church's anger. Two other Italian scientists of the time, Galileo and Bruno, agreed wholeheartedly with the Copernican theory. Bruno even dared to say that space was endless and contained many other suns, each with its own planets. For this, Bruno was sentenced to death by burning in 1600. Galileo, famous for his construction of the telescope, was forced to deny his belief in the Copernican theories. He escaped capital punishment, but was imprisoned for the rest of his life.

**H** In time however, Copernicus's work became more accepted. Subsequent scientists and mathematicians such as Brahe, Kepler and Newton took Copernicus's work as a starting point and used it to glean further truths about the laws of celestial mechanics.

**I** The most important aspect of Copernicus' work is that it forever changed the place of man in the cosmos. With Copernicus' work, man could no longer take that premier position which the theologians had immodestly assigned him. This was the first, but certainly not the last time in which man would have to accept his position as a mere part of the universe, not at the centre of it.

## **READING 3**

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Read the text and then answer questions 1-5.

### **Wind Power in the US**

Prompted by the oil crises of the 1970s, a wind-power industry flourished briefly in the United States. But then world oil prices dropped, and funding for research into renewable energy was cut. By the mid 1980s US interest in wind energy as a large-scale source of energy had almost disappeared. The development of wind power at this time suffered not only from badly designed equipment, but also from poor long-term planning, economic projections that were too optimistic and the difficulty of finding suitable locations for the wind turbines.

Only now are technological advances beginning to offer hope that wind power will come to be accepted as a reliable and important source of electricity. There have been significant successes in California, in particular, where wind farms now have a capacity of 1500 megawatts, comparable to a large nuclear or fossil-fuelled power station, and produce 1.5 per cent of the state's electricity.

Nevertheless, in the US, the image of wind power is still distorted by early failures. One of the most persistent criticisms is that wind power is not a significant energy resource. Researchers at the Battelle Northwest Laboratory, however, estimate that today wind turbine technology could supply 20 per cent of the electrical power the country needs. As a local resource, wind power has even greater potential. Minnesota's energy commission calculates that a wind farm on one of the state's south western ridges could supply almost all that state's electricity. North Dakota alone has enough sites suitable for wind farms to supply more than a third of all electricity consumed in the continental US.

The prevailing notion that wind power is too costly results largely from early research which focused on turbines with huge blades that stood hundreds of metres tall. These machines were not designed for ease of production or maintenance, and they were enormously expensive. Because the major factors influencing the overall cost of wind power are the cost of the turbine and its supporting systems, including land, as well as operating and maintenance costs, it is hardly surprising that it was thought at the time that wind energy could not be supplied at a commercially competitive price. More recent developments such as those seen on California wind farms have dramatically changed the economic picture for wind energy. These systems, like installations in Hawaii and several European countries, have benefited from the economies of scale that come through standardised manufacturing and purchasing. The result has been a dramatic drop in capital costs: the installed cost of new wind turbines stood at \$1000 per kilowatt in 1993, down from about \$4000 per kilowatt in 1980, and continues to fall. Design improvements and more efficient maintenance programs for large numbers of turbines have reduced operating costs as well. The cost of electricity delivered by wind farm turbines has decreased from about 30 cents per kilowatt-hour to between 7 and 9 cents, which is generally less than the cost of electricity from conventional power stations. Reliability has also improved dramatically. The latest turbines run more than 95 per cent of the time, compared with around 60 per cent in the early 1980s. Another misconception is that improved designs are needed to make wind power feasible. Out of the numerous wind turbine designs proposed or built by inventors or developers, the propeller-blade type, which is based on detailed analytical models as well as extensive experimental data, has emerged as predominant among the more than 20,000 machines now in commercial operation world-wide. Like the gas-driven turbines that power jet aircraft, these are sophisticated pieces of rotating machinery. They are already highly efficient, and there is no reason to believe that other configurations will produce major benefits. Like other ways of generating electricity, wind power does not leave the environment entirely unharmed. There are many potential problems, ranging from interference with telecommunications to impact on wildlife and natural habitats. But these effects must be balanced against those associated with other forms of electricity generation. Conventional power stations impose hidden costs on society, such as the control of air pollution, the management of nuclear waste and global warming. As wind power has been ignored in the US over the past few years, expertise and commercial exploitation in the field have shifted to Europe. The European Union spends 10 times as much as the US government on research and development of wind energy. It estimates that at least 10 per cent of Europe's electrical power could be supplied by land-based wind-turbines using current technology. Indeed, according to the American Wind Energy Association, an independent organisation based in Washington, Denmark, Britain, Spain and the Netherlands will each surpass the US in the generating capacity of wind turbines installed during the rest of the decade.

## ANSWERS Reading 1

1 Why are longer flights potentially harmful to passengers and crew?

**Because there isn't as much oxygen in the air.**

People will get bored

long periods of inactivity will damage their bones

2 What are flight socks?

special socks to keep the plane free of harmful bacteria

**one of the preventive measures planned by airlines**

socks that stop your blood getting too thin

3 Which of the following methods of countering the health problems caused by long flights is NOT mentioned?

how best to cope with jet lag

advice on food consumption during a flight

**advice on drinking alcohol**

4 What are the advantages of longer flights?

There are less problems with jet lag

**passengers save time**

passengers get a good break between flights

5 Where is the market for longer flights expected to develop?

between Europe and America

**between Asia and America**

between Asia and Europe

## ANSWERS Reading 2

### Questions 28 - 34

The text has nine paragraphs, A-I.

Which paragraph contains the following information?

28. the public's reaction to the new theory

29. an ancient belief about the position of the earth

30. Copernicus's legacy to the future of science

31. How academics built on Copernican ideas

32. An idea which is attractive to humans

33. Out-dated teaching and defective research

34. Scientists suffer for their beliefs

## ANSWERS Reading 3

1 Which one of the statements is true? ✓ Correct. - 'wind energy could not be supplied at a commercially competitive price'

- Wind power has developed steadily since the 1970s.
- Cost was a big factor in preventing the development of wind power
- Wind power can provide enough electricity for the United States
- Some US states are powered solely by wind

2 What is the general view of wind energy in the United States? ✓ Correct 'wind power is not a significant energy resource'

- very positive
- it can only provide small amounts of energy
- very negative
- it will reduce global warming

3 Which of these factors has not contributed to the reduced cost of wind energy? ✓ Correct Well done!

- state subsidies
- economies of scale
- standardisation of design
- more efficient maintenance

4 Wind turbine designs ... ✓ Correct 'They are already highly efficient'

- are expected to improve in the future
- are already very good
- will be much more efficient in the future
- are good for the environment

5 Wind energy is more developed in Europe than the USA ✓ Correct 'The European Union spends 10 times as much as the US government on research and development of wind energy'

- true
- false