Reading 7 HW

PASSAGE 1

Highs & Lows

Hormone levels – and hence our moods – may be affected by the weather. Gloomy weather can cause depression, but sunshine appears to raise the spirits. In Britain, for example, the dull weather of winter drastically cuts down the amount of sunlight that is experienced which strongly affects some people. They become so depressed and lacking in energy that their work and social life are affected. This condition has been given the name SAD (Seasonal Affective Disorder). Sufferers can fight back by making the most of any sunlight in winter and by spending a few hours each day under special, full-spectrum lamps. These provide more ultraviolet and blue-green light than ordinary fluorescent and tungsten lights. Some Russian scientists claim that children learn better after being exposed to ultraviolet light. In warm countries, hours of work are often arranged so that workers can take a break, or even a siesta, during the hottest part of the day. Scientists are working to discover the links between the weather and human beings' moods and performance.

It is generally believed that tempers grow shorter in hot, muggy weather. There is no doubt that 'crimes against the person' rise in the summer, when the weather is hotter and fall in the winter when the weather is colder. Research in the United States has shown a relationship between temperature and street riots. The frequency of riots rises dramatically as the weather gets warmer, hitting a peak around 27-30°C. But is this effect really due to a mood change caused by the heat? Some scientists argue that trouble starts more often in hot weather merely because there are more people in the street when the weather is good.

Psychologists have also studied how being cold affects performance. Researchers compared divers working in icy cold water at 5°C with others in water at 20°C (about swimming pool temperature). The colder water made the divers worse at simple arithmetic and other mental tasks. But significantly, their performance was impaired as soon as they were put into the cold water – before their bodies had time to cool down. This suggests that the low temperature did not slow down mental functioning directly, but the feeling of cold distracted the divers from their tasks.

Psychologists have conducted studies showing that people become less sceptical and more optimistic when the weather is sunny. However, this apparently does not just depend on the temperature. An American psychologist studied customers in a temperature-controlled restaurant. They gave bigger tips when the sun was shining and smaller tips when it wasn't, even though the temperature in the restaurant was the same. A link between weather and mood is made believable by the evidence for a connection between behaviour and the length of the daylight hours. This in turn might involve the level of a hormone called melatonin, produced in the pineal gland in the brain. The amount of

LIVEWORKSHEETS

melatonin falls with greater exposure to daylight. Research shows that melatonin plays an important part in the seasonal behaviour of certain animals. For example, food consumption of stags increases during the winter, reaching a peak in February / March. It falls again to a low point in May, then rises to a peak in September, before dropping to another minimum in November. These changes seem to be triggered by varying melatonin levels.

In the laboratory, hamsters put on more weight when the nights are getting shorter and their melatonin levels are falling. On the other hand, if they are given injections of melatonin, they will stop eating altogether. It seems that time cues provided by the changing lengths of day and night trigger changes in animals' behaviour – changes that are needed to cope with the cycle of the seasons. People's moods too, have been shown to react to the length of the daylight hours. Sceptics might say that longer exposure to sunshine puts people in a better mood because they associate it with the happy feelings of holidays and freedom from responsibility. However, the belief that rain and murky weather make people more unhappy is borne out by a study in Belgium, which showed that a telephone counselling service gets more telephone calls from people with suicidal feelings when it rains.

When there is a thunderstorm brewing, some people complain of the air being 'heavy' and of feeling irritable, moody and on edge. They may be reacting to the fact that the air can become slightly positively charged when large thunderclouds are generating the intense electrical fields that cause lightning flashes. The positive charge increases the levels of serotonin (a chemical involved in sending signals in the nervous system). High levels of serotonin in certain areas of the nervous system make people more active and reactive and, possibly, more aggressive. When certain winds are blowing, such as the Mistral in southern France and the Fohn in southern Germany, mood can be affected – and the number of traffic accidents rises. It may be significant that the concentration of positively charged particles is greater than normal in these winds. In the United Kingdom, 400,000 ionizers are sold every year. These small machines raise the number of negative ions in the air in a room. Many people claim they feel better in negatively charged air.

Questions 1–3
*Choose the appropriate letters **A–D**.*

1 Why did the divers perform less well in colder conditions?
- **A** They were less able to concentrate.
- **B** Their body temperature fell too quickly.
- **C** Their mental functions were immediately affected by the cold.
- **D** They were used to swimming pool conditions.

LIVEWORKSHEETS

2 The number of daylight hours
- **A** affects the performance of workers in restaurants.
- **B** influences animal feeding habits.
- **C** makes animals like hamsters more active.
- **D** prepares humans for having greater leisure time.

3 Human irritability may be influenced by
- **A** how nervous and aggressive people are.
- **B** reaction to certain weather phenomena.
- **C** the number of ions being generated by machines.
- **D** the attitude of people to thunderstorms.

Questions 4–9

*Are the following statements **TRUE**, **FALSE** or **NOT GIVEN**?*

4 Seasonal Affective Disorder is disrupting children's education in Russia.
5 Serotonin is an essential cause of human aggression.
6 Scientific evidence links 'happy associations with weather' to human mood.
7 A link between depression and the time of year has been established.
8 Melatonin levels increase at certain times of the year.
9 Positively charged ions can influence eating habits.

Questions 10–12

According to the text which **THREE** of the following conditions have been scientifically proved to have a psychological effect on humans?

- **A** lack of negative ions
- **B** rainy weather
- **C** food consumption
- **D** high serotonin levels
- **E** sunny weather
- **F** freedom from worry
- **G** lack of counselling facilities

LIVEWORKSHEETS

Questions 13–15

Complete each of the following statements with the best ending from the box below.

A daylight
B hot weather
C melatonin
D moderate temperatures
E poor co-ordination
F time cues
G impaired performance

13 It has been established that social tension increases significantly in the United States during

14 Research has shown that a hamster's bodyweight increases according to its exposure to

15 Animals cope with changing weather and food availability because they are influenced by

LIVEWORKSHEETS

POST-TEST EXERCISE

1. Complete the keyword table.

Keyword in questions	**Similar words in the passage**
the divers **perform less well** in colder conditions … [because] … they were *less able to concentrate*.	
The number of daylight hours INFLUENCES animal **feeding habits**.	
Human **irritability** may be influenced by reaction to certain *weather phenomena*.	
Serotonin is an **essential** cause of human *aggression*.	
Scientific evidence links '**happy associations with weather**' to human mood.	
A link between *depression* and the time of year has been **established**.	
Melatonin levels increase at certain times of the year.	
THREE of the following conditions have been scientifically proved to have a psychological effect on humans? • rainy weather • high serotonin levels • sunny weather	
social tension increases significantly … **during hot weather**	
Research has shown that a hamster's **bodyweight increases** according to its exposure to daylight	
Animals cope with changing weather … because they ***are influenced by*** time cues	

LIVEWORKSHEETS

2. Translate the following words into English.

1. depression (n) .....
2. riot (n) .....
3. cope with (phr v) .....
4. sceptical (n) .....
5. hormone (n) .....
6. trigger (v) .....
7. generate (v) .....
8. suicidal (adj) .....
9. intense (adj) .....
10. irritable (adj) .....

LIVEWORKSHEETS

PASSAGE 2

Tidal Power

Undersea turbines which produce electricity from the tides are set to become an important source of renewable energy for Britain. It is still too early to predict the extent of the impact they may have, but all the signs are that they will play a significant role in the future

A

Operating on the same principle as wind turbines, the power in sea turbines comes from tidal currents which turn blades similar to ships' propellers, but, unlike wind, the tides are predictable and the power input is constant. The technology raises the prospect of Britain becoming self-sufficient in renewable energy and drastically reducing its carbon dioxide emissions. If tide, wind and wave power are all developed, Britain would be able to close gas, coal and nuclear power plants and export renewable power to other parts of Europe. Unlike wind power, which Britain originally developed and then abandoned for 20 years allowing the Dutch to make it a major industry, undersea turbines could become a big export earner to island nations such as Japan and New Zealand.

B

Tidal sites have already been identified that will produce one sixth or more of the UK's power – and at prices competitive with modern gas turbines and undercutting those of the already ailing nuclear industry. One site alone, the Pentland Firth, between Orkney and mainland Scotland, could produce 10% of the country's electricity with banks of turbines under the sea, and another at Alderney in the Channel Islands three times the 1,200 megawatts of Britain's largest and newest nuclear plant, Sizewell B, in Suffolk. Other sites identified include the Bristol Channel and the west coast of Scotland, particularly the channel between Campbeltown and Northern Ireland.

C

Work on designs for the new turbine blades and sites are well advanced at the University of Southampton's sustainable energy research group. The first station is expected to be installed off Lynmouth in Devon shortly to test the technology in a venture jointly funded by the department of Trade and Industry and the European Union. AbuBakr Bahaj, in charge of the Southampton research, said: The prospects for energy from tidal currents are far better than from wind because the flows of water are predictable and constant. The technology for dealing with the hostile saline environment under the sea has been developed in the North Sea oil industry and much is already known about turbine blade design, because of wind power and ship propellers. There are a few technical difficulties, but I believe in the next five to ten years we will be installing commercial marine turbine farms.' Southampton has been awarded £215,000 over three years to develop the turbines and is working with Marine Current Turbines, a subsidiary of IT power, on the Lynmouth project. EU research has now identified 106 potential sites for tidal power, 80% round the coasts of Britain. The best sites are between islands or around heavily indented coasts where there are strong tidal currents.

LIVEWORKSHEETS

D

A marine turbine blade needs to be only one third of the size of a wind generator to produce three times as much power. The blades will be about 20 metres in diameter, so around 30 metres of water is required. Unlike wind power, there are unlikely to be environmental objections. Fish and other creatures are thought unlikely to be at risk from the relatively slow-turning blades. Each turbine will be mounted on a tower which will connect to the national power supply grid via underwater cables. The towers will stick out of the water and be lit, to warn shipping, and also be designed to be lifted out of the water for maintenance and to clean seaweed from the blades.

E

Dr Bahaj has done most work on the Alderney site, where there are powerful currents. The single undersea turbine farm would produce far more power than needed for the Channel Islands and most would be fed into the French Grid and be re-imported into Britain via the cable under the Channel.

F

One technical difficulty is cavitation, where low pressure behind a turning blade causes air bubbles. These can cause vibration and damage the blades of the turbines. Dr Bahaj said: 'We have to test a number of blade types to avoid this happening or at least make sure it does not damage the turbines or reduce performance. Another slight concern is submerged debris floating into the blades. So far we do not know how much of a problem it might be. We will have to make the turbines robust because the sea is a hostile environment, but all the signs that we can do it are good.

Questions 1–4

Which paragraph contains the following information?

NB *You may use any letter more than once.*

1. the location of the first test site
2. a way of bringing the power produced on one site back into Britain
3. a reference to a previous attempt by Britain to find an alternative source of energy
4. mention of the possibility of applying technology from another industry

LIVEWORKSHEETS

Questions 5–9

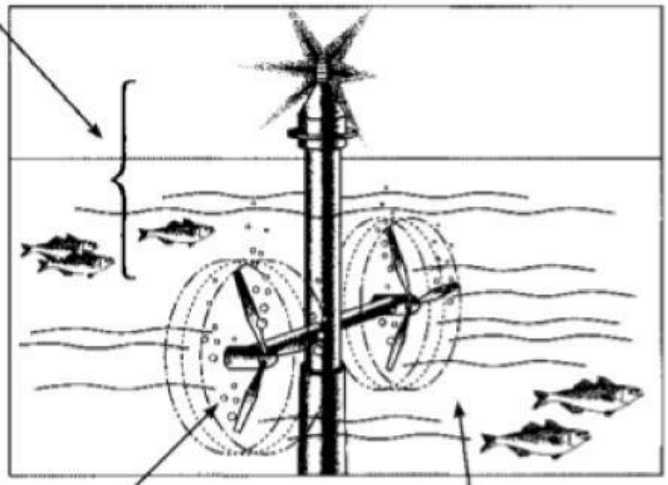
Which **FIVE** of the following claims about tidal power are made by the writer?

- **A** It is a more reliable source of energy than wind power.
- **B** It would replace all other forms of energy in Britain.
- **C** Its introduction has come as a result of public pressure.
- **D** It would cut down on air pollution.
- **E** It could contribute to the closure of many existing power stations in Britain.
- **F** It could be a means of increasing national income.
- **G** It could face a lot of resistance from other fuel industries.
- **H** It could be sold more cheaply than any other type of fuel.
- **I** It could compensate for the shortage of inland sites for energy production.
- **J** It is best produced in the vicinity of coastlines with particular features.

Questions 10–13

*Label the diagram with **NO MORE THAN TWO WORDS** from the passage for each answer.*

Whole tower can be raised for **10** ..... and the extraction of seaweed from the blades



Air bubbles result from the **12** ..... behind blades. This is known as **13** .....

Sea life not in danger due to the fact that blades are comparatively **11** .....

LIVEWORKSHEETS

POST-TEST EXERCISE

1. Complete the keyword table.

Keyword in questions	**Similar words in the passage**
the location of the first test site	
a *way* of **bringing the power produced** on one site back into Britain	
a reference to a **previous** attempt by Britain to find an alternative source of energy	
It is a **more reliable** source of energy **than wind power**	
It would **cut down on** air pollution	
the closure of many existing power stations	
a means of increasing national income	
It is best produced in the vicinity of coastlines **with particular features**	
tower can be **raised** for maintenance and the extraction of seaweed from the blades	
Sea life **not in danger**	
Air bubbles **result from** the low pressure	

2. Translate the following words into English.

1. renewable (adj) .....
2. robust (adj) .....
3. self-sufficient (adj) .....
4. undercut (v) .....
5. hostile (adj) .....
6. ailing (adj) .....
7. sustainable (adj) .....
8. venture (n) .....
9. debris (n) .....
10. objection (n) .....

LIVEWORKSHEETS