The Canals of De Lesseps

Two of the most spectacular engineering feats of the last 200 years were of the same type though thousands of miles apart. They were the construction of the Suez and Panama canals. The Panama Canal joins the Pacific and Atlantic oceans while the Suez joins the Red Sea (Indian Ocean) and the Mediterranean (Atlantic Ocean). Both offer ships huge savings in time and mileage. For example, a nine hour trip on the Panama Canal would save a total of 18,000 miles on a trip from New York to San Francisco. Amazingly enough the same French engineer, Ferdinand de Lesseps, played a major part in the construction of both.

The history of the Panama Canal goes back to 16th century with a survey of the isthmus and a working plan for a canal ordered by the Spanish government in 1529. In the 18th century various companies tried and failed to construct the canal but it wasn’t until 1880 that a French company, organized by Ferdinand Marie de Lesseps, proposed a sea level canal through Panama. He believed that if a sea level canal worked when constructing the Suez Canal, it must work for the Panama Canal. Finally the Panama Canal was constructed in two stages. The first between 1881 and 1888, the work being carried out by the French company headed by de Lesseps, and secondly, the work by the Americans which eventually completed the canal’s construction between 1904 and 1914. The French company ran out of money and an attempt was unsuccessful to raise funds by applying to the French government to issue lottery bonds which had been successful during the construction of the Suez Canal when that project was at the point of failure through lack of money. The French problems stemmed from their inability to create a viable solution to the differences in tidal changes in the Pacific and Atlantic Oceans. There is a tidal range of 20 feet at the Pacific whereas the Atlantic range is only about 1 foot. The Americans proposed that a tidal lock should be constructed at Panama which solved the problem and reduced excavation by an enormous amount. When construction was finally finished, the canal ran through various locks, four dams and ran the lengths of two naturally occurring lakes, the 32 mile Gatun Lake and the 5 mile Miraflores Lake.

When the US took on finishing the canal they and the new state of Panama signed the Hay-Bunau-Varilla treaty, by which the United States guaranteed the independence of Panama and secured a perpetual lease on a 10 mile strip for the canal. Panama was to be compensated by an initial payment of $10 million and an annuity of $250,000, beginning in 1913. On December 31st 1999 United States transferred the 51 mile Panama Canal, the surrounding Panama Canal Area and the income back to the Panamanian government.

The idea of a canal linking the Mediterranean to the Red Sea also dates back to ancient times. Unlike the modern canal, earlier ones linked the Red Sea to the Nile, therefore forcing the ships to sail along the River on their journey from Europe to India. It consisted of two parts: the first linking the Gulf of Suez to the Great Bitter Lake, and the second connecting the Lake to one of the branches in the Nile Delta that runs into the Mediterranean. The canal remained in good condition during the Ptolemaic era, but fell into disrepair afterwards and was completely
abandoned upon the discovery of the trade route around Africa.

It was Napoleon’s engineers who, around 1800 AD, revived the idea of a shorter trade route to India via a Suez canal. However, the calculation carried out by the French engineers showed a difference in level of 10 meters between both seas. If constructed under such circumstances, a large land area would be flooded. Later the digging of the canal was undertaken by the Ferdinand de Lesseps, who showed the previous French sea height estimates to be incorrect and that locks or dams were not needed.

In 1859, Egyptian workers started working on the construction of the canal in conditions described by historians as slave labor, and the project was completed around 1867. The canal is 163 km long, and has a width of a minimum of 60 metres. The canal cuts through three lakes, Lake Manzala in the north, Lake Timsah in the middle and the Great Bitter Lake further south. The largest, the Great Bitter Lake makes up almost 30 km of the total length. The canal is extensively used by modern ships as it is the fastest crossing from the Atlantic Ocean to the Indian Ocean.

In July 1956 the Egyptian president Nasser announced the nationalization of the canal in response to the British, French and American refusal for a loan aimed at building the Aswan High Dam on the Nile. The revenue from the canal, he argued, would help finance the High Dam project. Since then the Egyptians have controlled the canal. Today, approximately 50 ships cross the canal daily and the cities and beaches along the Great Bitter Lake and the canal serve as a summer resort for tourists.

Questions 1-8

Use the information in the text to match the statements (1 – 8) with the canal references (A – D). Write the appropriate letter (A – D) in boxes 1 – 8 on your answer sheet. Write:

A  if the statement refers to the Panama Canal.
B  if the statement refers to the Suez Canal.
C  if the statement refers to both the Panama Canal and the Suez Canal.
D  If the statement refers to neither the Panama Canal and the Suez Canal.

1  The surface of the whole canal is at sea level.
2  The canal’s construction had financial problems.
3  Dams had to be built to construct the canal.
4  The canal generates money for the country it passes through.
Previous labour conditions of construction workers at the canal have been criticised.

The canal’s construction was held up by war.

The canal is also a holiday destination.

Over half the canal is within a single lake.

Questions 9 - 13

Read the passage *The Canals of de Lessep’s* again and look at the statements below.

In boxes 9 - 13 on your answer sheet write:

- **TRUE** 
  *if the statement is true*

- **FALSE** 
  *if the statement is false*

- **NOT GIVEN** 
  *if the information is not given in the passage*

9. De Lessep’s Suez Canal construction theories were equally successful in the building of the Panama Canal as they were in building the Suez Canal.

10. The decision to use locks in the Panama Canal also saved time doing other activities.

11. The US were not happy about returning the control of the Panama Canal to Panama.

12. The current Suez Canal is the second canal that has joined the Red Sea to the Mediterranean.

13. The British government refused to give assistance in constructing the Suez Canal.
READING PASSAGE 2 Questions 14 - 27

You should spend about 20 minutes on Questions 14 – 27 which are based on Reading Passage 2 on the following page.

Questions 14 - 19

The reading passage on The Ozone Hole has 6 paragraphs (A – F).

From the list of headings below (i – ix) choose the most suitable headings for paragraphs A – F.

Write the appropriate number (i – ix) in boxes 14 – 19 on your answer sheet.

NB There are more headings than paragraphs, so you will not use them all.

<table>
<thead>
<tr>
<th>i</th>
<th>The Destruction Process</th>
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<td>ii</td>
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14 Paragraph A
15 Paragraph B
16 Paragraph C
17 Paragraph D
18 Paragraph E
19 Paragraph F
The Ozone Hole

Paragraph A

Ozone is a bluish gas that is harmful to breathe. Nearly 90% of the Earth’s ozone is in the stratosphere and is referred to as the ozone layer. Ozone absorbs a band of ultraviolet radiation called UVB that is particularly harmful to living organisms. Stratospheric ozone is constantly being created and destroyed through natural cycles. Various ozone depleting substances however, accelerate the destruction processes, resulting in lower than normal ozone levels. Reductions in ozone levels will lead to higher levels of UVB reaching the Earth’s surface. The sun’s output of UVB does not change; rather, less ozone means less protection, and hence more UVB reaches the Earth. Studies have shown that in the Antarctic, the amount of UVB measured at the surface can double during the annual ozone hole. Laboratory and epidemiological studies demonstrate that UVB causes non melanoma skin cancer and plays a major role in malignant melanoma development. In addition, UVB has been linked to cataracts.

Paragraph B

Dramatic loss of ozone in the lower stratosphere over Antarctica was first noticed in the 1970s by a research group from the British Antarctic Survey (BAS) who were monitoring the atmosphere above Antarctica from a research station. Folklore has it that when the first measurements were taken in 1975, the drop in ozone levels in the stratosphere was so dramatic that at first the scientists thought their instruments were faulty. Replacement instruments were built and flown out and it wasn’t until they confirmed the earlier measurements, several months later, that the ozone depletion observed was accepted as genuine. Another story goes that the BAS satellite data didn’t show the dramatic loss of ozone because the software processing the raw ozone data from the satellite was programmed to treat very low values of ozone as bad readings. Later analysis of the raw data when the results from the British Antarctic Survey team were published, confirmed their results and showed that the loss was rapid and large-scale; over most of the Antarctica continent.

Paragraph C

Ozone occurs naturally in the atmosphere. The earth’s atmosphere is composed of several layers. We live in the Troposphere, ground level up to about 10km high, where most of the weather occurs such as rain, snow and clouds. Above that is the Stratosphere, an important region in which effects such as the Ozone Hole and Global Warming originate. The layer next to space is the Exosphere and then going inwards there are the Thermosphere and the Mesosphere. Supersonic passenger jets fly just above the troposphere whereas subsonic commercial airliners are usually well in the troposphere. The narrow region between these two parts of the atmosphere is called the Tropopause. Ozone forms a layer in the stratosphere, thinnest in the tropics and denser towards the poles. The amount of ozone above a point on the earth’s surface is measured in Dobson units (DU) - typically ~260 DU near the tropics and higher elsewhere, though there are large seasonal fluctuations. It is created when ultraviolet radiation in the form of sunlight strikes the stratosphere, splitting oxygen molecules to atomic oxygen. The atomic oxygen quickly combines with further oxygen molecules to form ozone.
Paragraph D

The Ozone Hole often gets confused in the popular press and by the general public with the problem of global warming. Whilst there is a connection because ozone contributes to the greenhouse effect, the Ozone Hole is a separate issue. Over Antarctica (and recently over the Arctic), stratospheric ozone has been depleted over the last 15 years at certain times of the year. This is mainly due to the release of man-made chemicals containing chlorine such as CFCs (ChloroFluoroCarbons), but also compounds containing bromine, other related halogen compounds and also nitrogen oxides. CFC’s are a common industrial product, used in refrigeration systems, air conditioners, aerosols, solvents and in the production of some types of packaging. Nitrogen oxides are a by-product of combustion processes, for example aircraft emissions.

Paragraph E

The ozone depletion process begins when CFCs and other ozone depleting substances are emitted into the atmosphere where winds efficiently mix and evenly distribute the gases. CFCs are extremely stable, and they do not dissolve in rain. After a period of several years natural gases in the stratosphere combine with CFCs and this releases chlorine atoms, halons and methyl bromide. These in turn all release bromine atoms and it is these atoms that actually destroy ozone. It is estimated that one chlorine atom can destroy over 100,000 ozone molecules before it is removed from the stratosphere.

Paragraph F

The first global agreement to restrict CFCs came with the signing of the Montreal Protocol in 1987 ultimately aiming to reduce them by half by the year 2000. Two revisions of this agreement have been made in the light of advances in scientific understanding, the latest being in 1992. Agreement has been reached on the control of industrial production of many halocarbons until the year 2030. The main CFCs will not be produced by any of the signatories after the end of 1995, except for a limited amount for essential uses, such as for medical sprays. The countries of the European Community have adopted even stricter measures. Recognizing their responsibility to the global environment they have agreed to halt production of the main CFCs from the beginning of 1995. It was anticipated that these limitations would lead to a recovery of the ozone layer within 50 years of 2000. The World Meteorological Organisation estimated 2045 but recent investigations suggest the problem is perhaps on a much larger scale than anticipated.
Questions 20 - 25

Complete the following statements (questions 20 - 25) with the best ending from the box below (A - H) according to the information in the reading passage The Ozone Hole.

Write the appropriate letter (A - H) on your answer sheet.

There are more sentence endings (A - H) than questions so you will not need to use them all.

20 International agreements will eventually lead to...

21 An apocryphal BAS story cites that equipment was changed to measure...

22 It is a common mistake to associate the Ozone Hole problem with...

23 The thickness of the Ozone layer varies with...

24 The Ozone layer is destroyed by a by-product of CFCs reacting with...

25 Common household appliances contribute to...

A ...the location of the layer relative to the earth.

B ...the discharge of synthetic chemicals into the atmosphere.

C ...the satellite orbiting the earth.

D ...the normal components of the earth’s atmosphere.

E ...the apparently anomalous readings taken earlier.

F ...the issue of the heating up of the earth’s atmosphere.

G ...recent investigations into the strength of Dobson Units.

H ...the cessation of the release of most CFC gases into the atmosphere.
Questions 26 and 27

Answer questions 26 and 27 below with reference to the diagram of the earth and its layers of atmosphere at the bottom of the page.

Write the appropriate letter (A - E) on your answer sheet.

26 In which atmosphere layer would you find the Ozone layer and hole?

27 In which atmosphere layer would you find a conventional passenger airliner usually flying?
OLIVE OIL PRODUCTION

Olive oil has been one of the staples of the Mediterranean diet for thousands of years and its popularity is growing rapidly in other parts of the world. It is one of the most versatile oils for cooking and it enhances the taste of many foods. Olive oil is the only type of vegetable/fruit oil that can be obtained from just pressing. Most other types of popular oils (corn, canola, etc.) must be processed in other ways to obtain the oil. Another important bonus is that olive oil has proven health benefits. Three basic grades of olive oil are most often available to the consumer: extra Virgin, Virgin and Olive Oil. In addition to the basic grades, olive oil differs from one country or region to another because of the types of olives that are grown, the harvesting methods, the time of the harvest, and the pressing techniques. These factors all contribute to the individual characteristics of the olive oil.

Olive trees must be properly cared for in order to achieve good economic yields. Care includes regular irrigation, pruning, fertilising, and killing pests. Olives will survive on very poor sites with shallow soils but will grow very slowly and yield poorly. Deep soils tend to produce excessively vigorous trees, also with lower yields. The ideal site for olive oil production is a clay loam soil with good internal and surface drainage. Irrigation is necessary to produce heavy crops and avoid alternate bearing. The site must be free of hard winter frosts because wood damage will occur at temperatures below 15°F and a lengthy spell of freezing weather can ruin any chances for a decent crop. The growing season also must be warm enough so fruits mature before even light fall frosts (usually by early November) because of potential damage to the fruit and oil quality. Fortunately olive trees are very hardy in hot summer temperatures and they are drought tolerant.

The best olive oils hold a certificate by an independent organization that authenticates the stone ground and cold pressed extraction process. In this process, olives are first harvested by hand at the proper stage of ripeness and maturity. Experts feel that hand harvesting, as opposed to mechanical harvesting, eliminates bruising of the fruit which causes tartness and oil acidity. The olives harvested are transferred daily to the mill. This is very important because this daily transfer minimizes the time spent between picking and pressing. Some extra virgin olive oil producers are known to transfer the olives by multi-ton trucks over long distances that expose the fragile fruit to crushing weight and the hot sun, which causes the olives to begin oxidizing and thus becoming acidic. In addition to the time lapse between harvesting and pressing, olive oil must be obtained using mechanical processes only to be considered virgin or extra virgin. If heat and/or chemical processes are used to produce the olive oil or if the time lapse is too long, it cannot be called virgin or extra virgin.

Once at the mill, the leaves are sucked away with air fans and the olives are washed with circulating potable water to remove all impurities. The first step of extraction is mashing the olives to create a paste. The oil, comprising 20% to 30% of the olive, is nestled in pockets within the fruit’s cells. The olives are crushed in a mill with two granite millstones rolling within a metal basin. Crushing and mixing the olives releases the oil from the cells of the olive without heating the paste. A side shutter on the mill’s basin allows the mixed olive paste to be discharged and applied to round mats. The mats are stacked and placed under the head of a hydraulic press frame that applies downward pressure and extracts the oil. The first pressing yields the superior quality oil, and the second and third pressings produce inferior quality oil. Some single estate producers
collect the oil that results from just the initial crushing while many other producers use an additional step to extract more oil. The olive pulp is placed on mats constructed with hemp or polypropylene that are stacked and then pressed to squeeze the pulp. Oil and water filter through the mats to a collection tank below. The water and oil are then separated in a centrifuge.

Regardless of the method used for the first pressing, the temperature of the oil during production is extremely important in order to maintain the distinct characteristics of the oil. If the temperature of the oil climbs above 86ºF, it will be damaged and cannot be considered cold-pressed.

The first pressing oil contains the most “polyphenols”, substances that have been found to be powerful antioxidants capable of protecting against certain types of disease. The polyphenols are not the only substances in the olive with health-promoting effects, but they are quite unique when compared to other commonly used culinary oils such as sunflower and soy. It is these polyphenols that really set extra virgin olive oils apart from any other oil and any other form of olive oil. The more refined the olive oil is, the smaller the quantity of polyphenols.

The result of the producers’ efforts is a cold pressed extra virgin olive oil with high quality standards and organoleptic characteristics, which give the oil its health-protective and aromatic properties.

Questions 28 - 31

Choose the appropriate letters A – D that best finish the sentence or best answer the question and write them in boxes 28 – 31 on your answer sheet.

28 According to the text, which of the following does NOT affect the individual features of olive oils from different regions?

A  Picking techniques
B  The date of the picking
C  Olive varieties
D  Access to water

29 According to the text, which of the following is NOT part of olive tree management?

A  Careful watering
B  Replanting
C  Killing parasites
D  Feeding
30 According to the text, what is the main danger of frost?

A  It kills the olive trees
B  The fruit won’t mature
C  Not enough fruit will be produced
D  The olives produced will be small in size

31 According to the text, which of the following does NOT affect the “extra virgin” olive oil certification?

A  The temperature of the extraction process
B  The time gap between tree and bottle
C  Which pressing the oil is taken from
D  Using water in the extraction process

Questions 32 - 34

Read the passage Olive Oil Production again and look at the statements below.

In boxes 32 - 34 on your answer sheet write:

TRUE  if the statement is true

FALSE  if the statement is false

NOT GIVEN  if the information is not given in the text

32 Olive trees don’t need a regular supply of water to survive.

33 No other cooking oils apart from olive oil contain polyphenols.

34 Damage to olives before they are pressed can affect the taste of the oil.
Questions 35 – 40

Using the information in Reading Passage 3, complete the flow chart below.

Write your answers in boxes 35 – 40 on your answer sheet.

Use NO MORE THAN THREE WORDS from the passage for each answer.

The Olive Oil Production Process

The three grades of oil produced are (eg) ____________, Virgin and Olive Oil.

Olive trees should be planted in (35) ________________ earth with good drainage in a year round warm climate.

Trees must be carefully irrigated and fertilised and (36) ________________ must be controlled if you want to get (37) ________________ that will make you profit.

Olives are harvested when they are correctly ripened and matured and they are then taken to the mill.

Leaves are removed with drinking water.

Olives are crushed to form a (38) ________________.

The paste is put on round mats inside a (39) _________________. Water is blended in with the paste as it’s pressed and a water/oil mixture escapes.

Water is removed by a (40) ________________ process. The Oil is then bottled and distributed.