

READING PASSAGE 1

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

The oak trees in Britain

Oak trees, which have a special place in folklore in many parts of Europe, are associated with the gods of thunder and lightning in Greek, Roman and Celtic mythology. This link may in part be due to the towering habit of the oak tree, which has made it susceptible to being struck by lightning, standing out as it does from the surrounding trees.

Among the approximately 60 trees native to Britain are two indigenous species of oak: the English oak (*Quercus robur*) and the Sessile oak (*Quercus petraea*), both of which are deciduous and flower in late spring. The former favours fertile lowland soils and the latter less fertile and wetter soils on higher ground.

The English oak, the most common British tree species, represents strength and endurance as reflected in its Latin name. It has been celebrated in folklore and in coinage with the 2012 £5 official coin featuring the leaf and acorn of the oak tree. The species can probably lay claim to being the most famous in Britain, where its leaves are a national symbol. The English oak can grow to a height of 35 metres with a rounded head and spreading habit of up to 30 metres in diameter, while the Sessile oak can grow to a height of 40 metres with a spreading habit of 25 metres. The flowers in both trees are borne in yellow green catkins. The leaves of the English oak have very short stalks and are alternate on the branches, but have long-stalked acorns, held tightly in cupules. The Sessile oak, by comparison, has long-stalked leaves, but short-stalked acorns. The acorns turn from green to brown in autumn and when loosened from the cupules fall to the ground below. Both trees have a grey bark with the English oak having deep vertical fissures, but ridges developing only in mature trees in the case of the Sessile oak.

Oak trees can live to more than 200 years with the oldest known, the Pontfadog Oak, a Sessile oak in Wales, being knocked over by winds in 2013. But despite their great age, according to the Woodland Trust in the UK, the oldest British tree, a yew tree known as the Fortingall Yew in Perthshire is considered to be more than 3,000 years old and may be considerably more.

Oak trees are invaluable habitats for a wide range of wildlife species with both types of oak being a habitat for more wildlife than other trees native to Britain. More than 250 different species of insects are found in oaks, providing food for other wildlife such as birds. Their bark is an ideal habitat for 300 or more species of lichen that have been found growing there. Their cavities and branches also provide a home for birds and bats and in autumn the ground under the canopy of spreading oak branches provides a rich source of food for a wide variety of insects, such as beetles, and fungi. The 50,000 or more acorns produced by oak trees over their lifetime were once used for making flour for bread, but are now a welcome food for various birds and mammals, including the red squirrel, badger and mice.

Oak trees have also had some other important uses worth noting. Apart from their use in herbal medicine for the treatment of conditions such as diarrhoea and kidney stones, being a hard wood the timber of oak trees was once used in ship-building, but today its main use is in furniture-making, for floors in buildings, and firewood.

After a serious shortage of timber was identified during the First World War, the UK Forestry Commission was established in 1919 for the expansion and protection of woods in Britain. However, despite new forests being planted and private woodland being regenerated by the Commission, since the 1920s oak trees have been under serious threat. The foliage of the oak trees and their bark have been affected by the oak processionary moth, which is also a health hazard for humans, causing itching and respiratory problems. Two other diseases having an impact on the health of Britain's oaks are Acute Oak Decline (AOD) and Chronic Oak Decline (COD), especially in southern and eastern England. The canopy of an affected tree is thinner than normal, the branches die back and black weeping wounds are found on the tree's stems.

Britain's oak trees are in danger of suffering the same fate as the ancient woodland that once covered Britain and Europe, unless they are given greater protection not only from diseases, but also from the impact of shrinking habits and pollution as the result of the human development.

Questions 1–4

Answer the questions below.

Choose **NO MORE THAN THREE WORDS AND/OR A NUMBER** from the passage for each answer.

- 1 What aspect of oak trees makes them prone to lightning strikes?
- 2 How many oak trees are native to Britain?
- 3 What kind of soil is the English oak likely to be found in?
- 4 What does the English oak symbolise?

Questions 5–8

Classify the following descriptions as relating to the different species of oak tree.

- A The English oak
 - B The Sessile oak
 - C Both the English oak and Sessile oak
- 5 The acorns are attached to the branches by long stalks.
 - 6 The older trees do not have smooth barks.
 - 7 The bark is grey in colour.
 - 8 The catkins are yellow green.

Questions 9–13

Do the following statements agree with the information given in the Reading Passage?

Write:

- YES** if the statement agrees with the claims of the writer
NO if the statement contradicts the claims of the writer
NOT GIVEN if it is impossible to say what the writer thinks about this

- 9 The life span of oak trees rarely exceeds two centuries.
- 10 British oak trees provide a home for more wildlife than other indigenous British trees.
- 11 Oak tree acorns were at one time employed in bread production.
- 12 Oak trees are no longer used for timber in shipbuilding.
- 13 The sole purpose of the establishment of the Forestry Commission was to protect British woods.

READING PASSAGE 2

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

Ice harvested in Norway

In the days prior to mechanical refrigeration, in many countries with mild climates ice was a prized commodity available only to commercial enterprises and large houses with sufficient facilities for ice production in ponds and for storage. Up to the 1840s, for example, the ice available in London, restricted by the climate, was collected from lakes, and even canals such as the Regent's Canal, which runs through central London. The ice, however, was of questionable quality.

As demand grew, ice was shipped from the United States to supply the needs of merchants. That was the case until a Swiss entrepreneur by the name of Carlo Gatti, working in the London catering trade, brought a shipment of 400 tons of ice to London in 1857 from Norway. Norway then became the dominant provider of ice to London until the end of the century when mechanical refrigeration appeared on the scene. Without fridges, however, Gatti had to ensure the ice would not melt, so he had two ice wells built in Wharf Road near King's Cross.

The ice from Norway started its life in frozen lakes, some of them artificially made for the purpose of harvesting. Ice is produced when water starts freezing at 40 °F, or 5 °C, but in order to be harvested the frozen ice needs to be around a minimum of half a metre thick, both to create large enough blocks for harvesting and to support the weight of workers and horses involved in the process. The ice cutting was typically carried out at night when the ice was thicker.

The optimum harvest time in Norway was between December and February when the ice was sufficiently thick to be cut. Mild winters could result in ice famines, with one such event occurring in Norway in 1898 seriously affecting the UK ice market.

The quality of the ice varied with the hardest and clearest being reserved for table use and the rest for the commercial world. This seasonal work provided useful employment at a quiet time of the year.

Ice harvesting required a range of specialist tools, including chisels, ice saws and grapples, and protective equipment, such as special shoes for both the workers and horses. At the beginning of the ice harvest, the surface of the area on a lake selected for harvesting was cleaned of snow, and the ice thickness

was tested. This cleaned area was marked out by a worker and a horse pulling a cutter, much like a slim plough, with parallel blades that created long grooves in the lake surface. The ice was then cut along these grooves using metal handsaws. The blocks needed to be manageable for workers lifting and dragging them using the grapples.

The size of individual blocks varied according to their final destination with the smallest being about half a metre square. As about a quarter of the ice could be lost from melting during transport and storage, the further away the destination, the larger the individual blocks needed to be.

In Norway, the artificial lakes for ice harvesting were close to the sea for ease of export. Once the ice blocks were floated to the lake shore, they were lifted out of the water using the grapples and slid along the ice to special slides, which formed a wooden railway carrying the ice down to the docks, where they were loaded onto ships bound for London. Once they reached the London docks, the blocks of ice were unloaded onto horse-drawn barges, and taken along the canal to the underground ice wells in Wharf Road at King's Cross. There they could be kept for months until they were needed.

As the demand for ice grew, a host of related industries grew up around the ice trade. Apart from the production of the specialist tools and clothing, manuals were printed on how to create artificial lakes for ice harvesting; and special ships and train wagons for delivery of the ice were built among other new developments. The growth of the ice trade also affected the timber industry, as otherwise useless sawdust became a valuable commodity for packing and storing ice during transport.

The ice itself was much sought after by meat and fish sellers, and by pharmacists for various other purposes, including medicine to alleviate sprains and inflammation. But one particular consequence of the shipping of cheaper ice from Norway to London, for which Carlo Gatti is credited, is the introduction and growth of large-scale ice cream production, which prior to this had been the preserve of a few.

In the end, mechanical refrigeration removed the need to transport ice, but this new process led to the relative ease of the production, storage and distribution of ice cream.

Questions 14–18

Do the following statements agree with the information given in Reading Passage 2?

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.

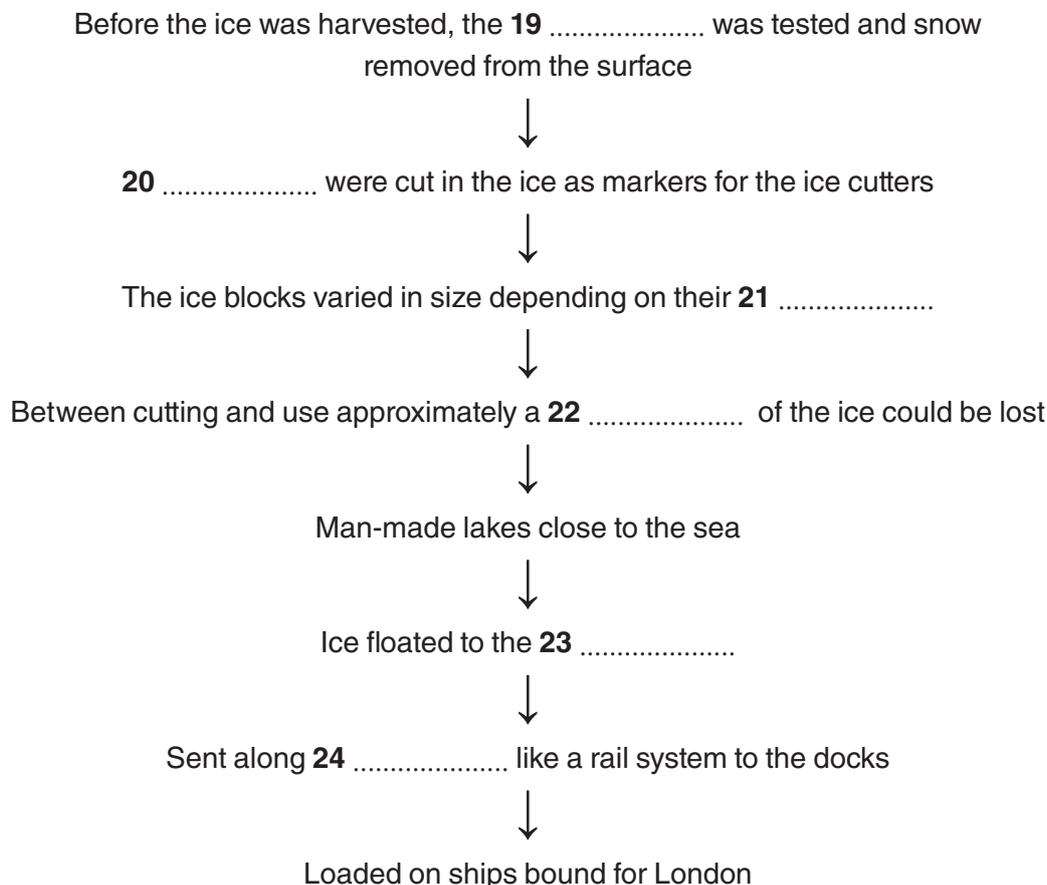
- 14 The standard of the ice produced in London in the early days was not very good.
- 15 Norway emerged as one of the suppliers of ice to London in the latter half of the 19th century.
- 16 Ice to be harvested had to be more than a metre thick.
- 17 The number of workers employed in the Norwegian ice trade rose dramatically when trade with London began.
- 18 The occurrence of ice famines was relatively rare.

Questions 19–24

Complete the flow-chart below.

Choose **NO MORE THAN TWO WORDS** from the passage for each answer

Harvesting the ice



Questions 25–27

Answer the questions below.

*Choose **NO MORE THAN TWO WORDS** from the passage for each answer.*

25 What were published to give advice on creating man-made lakes?

26 What item was turned from a product of no value to one of some monetary worth?

27 By what means was ice cream brought to a wider public?

READING PASSAGE 3

You should spend about 20 minutes on **Questions 28–40**, which are based on Reading Passage 3 below.

The age of automation

Automation is gathering pace around the world. Should we fear or embrace and control it?

- A** Automation as a term only gained wide currency after the late 1940s when a department devoted to automation was set up within the motor company Ford. Then other organisations began to follow suit. Automation, in modern terms, is a process where systems such as those in telephony, in manufacturing production, for example automobiles and machine parts, are controlled by machines, with limited need for human involvement. Other examples of similar systems that can be controlled automatically are heating systems, and processes such as robotic assistants, cleaners, and banking systems, with the number of areas now increasing at a hectic pace.
- B** Automation is driven by a variety of interconnected factors. Economic gain is the primary reason that most are likely to give as the impetus behind any development in the field. The human desire for improvement, the joy of creating something new, the development of innovative processes and essentially the competitive side of the creative human process, are also important factors. Another factor is the desire to make life more convenient and comfortable. To have a chance of catching on as a desirable product, many new inventions in the automation field that are outside the gaze of the public eye, such as computerised banking systems, have only to pass the test of functionality. But if a product such as a personal robot requires direct human interaction, it must have some aesthetic appeal.
- C** New discoveries have always shaped society with different types of jobs being created, then lost and new ones being generated. For example, the process involved in making a telephone call in the early days of telephony now seems very cumbersome to people today. The caller had to contact an operator, who then connected the caller to someone at the other end of the line. A significant milestone in the history of telephony, and hence modern day automation, was reached in the early 1900s when telephone exchanges became automated with the introduction of dial telephones. Prior to automation, operators were a necessity, but as customers wishing to make calls transmitted the telephone number to an automatic switching system, these workers were replaced with electromechanical systems. Dialing numbers was then replaced with pushing buttons, and buttons with touch screens on smartphones. One wonders how much longer it will be before touch screens are superseded by touching the air, as virtual reality headsets dispense with machines like computer screens, landline phones and mobiles altogether.
- D** As the process of telephony has developed, the new jobs to build and operate the system created in its early days have disappeared. Over time, telephony has evolved with the constant creation of new professions that range across invention, design, manufacturing and then maintenance of new systems and also embrace computerised and digital systems, with increasing input from a wide range of creative and entertainment media.
- E** The latest developments in 3-D printing promise even further revolutionary developments in all fields, not just industry, as such devices print not only physical structures, but circuitry for using advanced digital systems. The impact on manufacturing jobs could be huge with production costs being reduced, but new avenues and opportunities will open up as greater numbers of creative designers and engineers to create, build and then service the equipment become essential. Further, as with all such developments, new professions that are now unforeseen will be created.

- F** It is not surprising that people's attention is drawn to job losses with the spread of automation. Current predictions of job losses running into millions, if not tens of millions, of internet posts worldwide do not paint a rosy picture of the future. Yet if history is anything to go by, the human race should feel more positive about the world to come. What is, perhaps, different now and is more menacing for the general public is the fact that technology is introducing changes in all directions at the same time, not just by way of automation, and it is, therefore, more disruptive.
- G** What is surprising is that around the world working environments are suffering from a lack of appropriately skilled workers to meet the very technological changes by way of more specialised technical jobs in the creative industries, for example, that are being thrown up by automation. Governments, companies and individuals need to rise to the challenge and seize the opportunities with the former putting more money, effort and strategic leadership into preparing workers for the workplaces and careers of the future. As well as skills training, help for workers with guidance in being flexible and willing to adapt and manage change is vital. If the workers of the future are to flourish, they must not leave the future to chance, but embrace and control the age of automation.

Questions 28–32

Reading Passage 3 has seven paragraphs, A–G. Which paragraph contains the following information?

Write the correct letter, A–G.

NB You may use any letter more than once.

- 28** a list of the reasons behind the development of automation
- 29** the need for assistance for workers to deal with automation
- 30** a detailed description of working practices before automation became established
- 31** a definition of the word automation
- 32** possible effects of 3-D printing on employment in manufacturing

Question 33–37

Complete the sentences below.

*Choose **NO MORE THAN TWO WORDS AND/OR A NUMBER** from the passage for each answer.*

- 33** The growth in the fields in which automation is being used is happening at a
- 34** Apart from their practical usefulness, some automatic devices need to have
- 35** The use of dial telephones was a in telephonic automation.
- 36** that directed calls took over from telephone operators.
- 37** Even more dramatic changes will come from , making it cheaper to produce factory goods.

Questions 38–40

Complete each sentence with the correct ending A–E, below.

38 The experiences of history should

39 Technological developments from different places simultaneously

40 Workers in years to come will need to

A be open to change.

B make people optimistic about the future.

C increase people's confidence in technology.

D become more involved in company development.

E unsettle people more.