

Indoor farming

1. Some food plants, including, are already grown indoors.
2. Vertical farms would be located in, meaning that there would be less need to take them long distances to customers.
3. Vertical farms could use methane from plants and animals to produce.....
4. The consumption of would be cut because agricultural vehicles would be unnecessary.
5. The fact that vertical farms would need light is a disadvantage.
6. One form of vertical farming involves planting in which are not fixed.

7. The most probable development is that food will be grown on in towns and cities.

Questions 8-13

In boxes 8-13 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

8. Methods for predicting the Earth's population have recently changed.
9. Human beings are responsible for some of the destruction to food-producing land.
10. The crops produced in vertical farms will depend on the season.
11. Some damage to food crops is caused by climate change.
12. Fertilisers will be needed for certain crops in vertical farms.

13. Vertical farming will make plants less likely to be affected by infectious diseases.

Write your answers in boxes 1-9 on your answer sheet.

The Early History of Cinnamon

<u>Biblical times:</u>	<p><u>added to</u> 1</p> <p><u>used to show</u> 2 <u>between people</u></p>
Ancient Rome:	<p><u>used for its sweet smell</u> at 3</p>
Middle Ages:	<p>added to food, especially meat</p> <p>was an indication of a person's 4</p> <p>known as a treatment for 5 and other health problems</p> <p>grown in 6</p> <p>merchants used 7 to bring it to the Mediterranean</p> <p>arrived in the Mediterranean at 8</p>
	<p>traders took it to 9 and sold it to destinations around Europe</p>

In boxes 10-13 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

10. The Portuguese had control over the cinnamon trade in Ceylon throughout the 16th century.

11. The Dutch took over the cinnamon trade from the Portuguese as soon as they arrived in Ceylon.

12. The trees planted by the Dutch produced larger quantities of cinnamon than the wild trees.

13. The spice trade maintained its economic importance during the 19th century.

14. The Falkirk Wheel has linked the Forth & Clyde Canal with the Union Canal for the first time in their history.

15. There was some opposition to the design of the Falkirk Wheel at first.

16. The Falkirk Wheel was initially put together at the location where its components were manufactured.

17. The Falkirk Wheel is the only boat lift in the world which has steel sections bolted together by hand.

18. The weight of the gondolas varies according to the size of boat being carried.

19. The construction of the Falkirk Wheel site took into account the presence of a nearby ancient monument.

A pair of **20** are lifted in order to shut out water from canal basin

A **21** is taken out, enabling Wheel to rotate

26
raise boat 11 m
to level of Union
Canal

Hydraulic motors drive **22**

Boat travels
through tunnel
beneath Roman
25

Boat is raised,
floating in one
of Wheel's two
gondolas

Boat reaches top Wheel, then
moves directly onto **24**

A range of different-sized **23**
ensures boat keeps upright

Questions 1–4

Reading Passage 1 has eight paragraphs, **A–H**.

Which paragraph contains the following information?

*Write the correct letter, **A–H**, in boxes 1–4 on your answer sheet.*

- 1** a description of an early timekeeping invention affected by cold temperatures
- 2** an explanation of the importance of geography in the development of the calendar in farming communities
- 3** a description of the origins of the pendulum clock
- 4** details of the simultaneous efforts of different societies to calculate time using uniform hours

Look at the following events (Questions 5–8) and the list of nationalities below.

*Match each event with the correct nationality, **A–F**.*

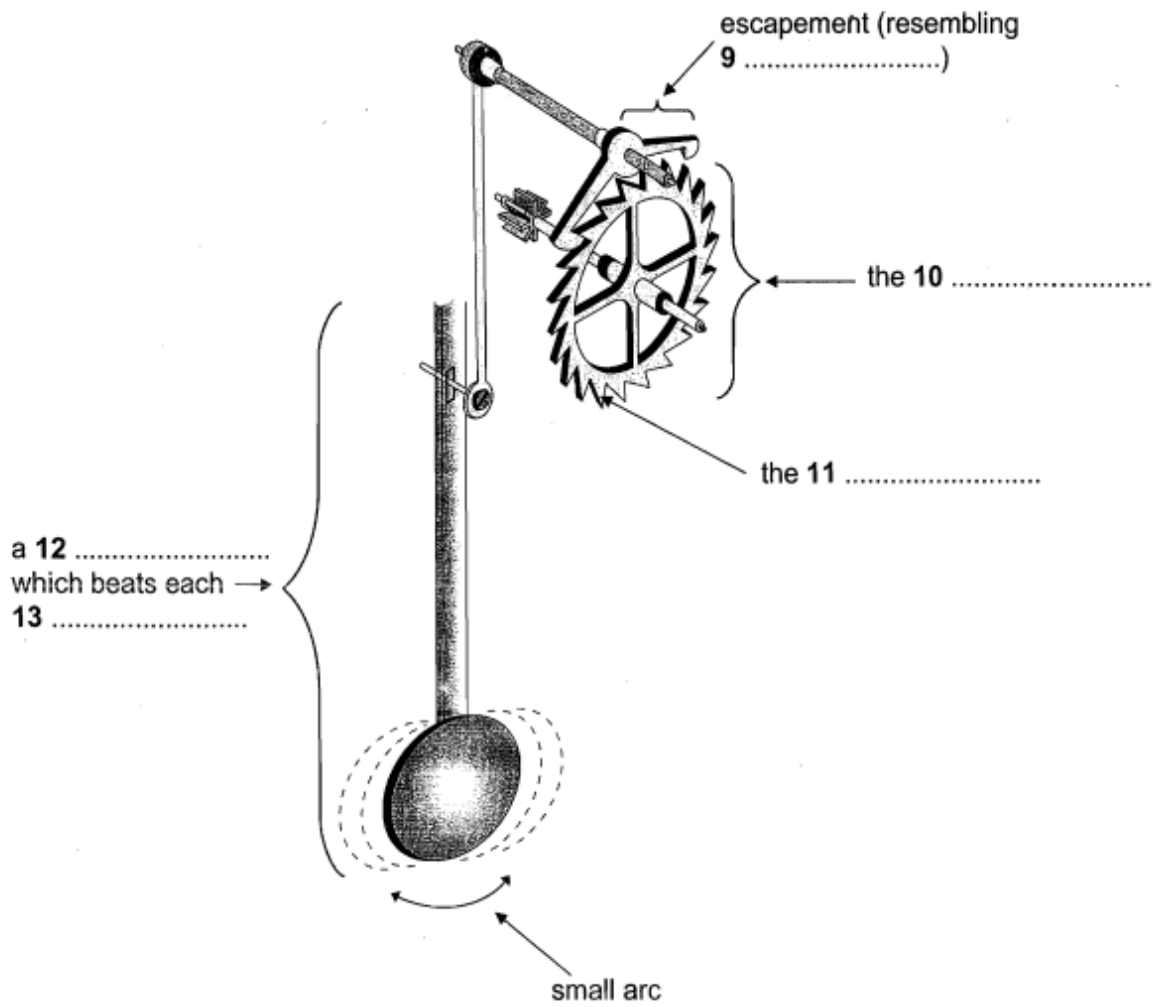
*Write the correct letter, **A–F**, in boxes 5–8 on your answer sheet.*

- 5** They devised a civil calendar in which the months were equal in length.
- 6** They divided the day into two equal halves.
- 7** They developed a new cabinet shape for a type of timekeeper.
- 8** They created a calendar to organise public events and work schedules.

List of Nationalities

- A** Babylonians
- B** Egyptians
- C** Greeks
- D** English
- E** Germans
- F** French

How the 1670 lever-based device worked



List of Headings

- i Disobeying FAA regulations
- ii Aviation disaster prompts action
- iii Two coincidental developments
- iv Setting altitude zones
- v An oversimplified view
- vi Controlling pilots' licences
- vii Defining airspace categories
- viii Setting rules to weather conditions
- ix Taking off safely
- x First steps towards ATC

14 Paragraph A

Example
Paragraph B

Answer
x

15 Paragraph C

16 Paragraph D

17 Paragraph E

18 Paragraph F

19 Paragraph G

Questions 20–26

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

In boxes 20–26 on your answer sheet, write

TRUE	<i>if the statement agrees with the information</i>
FALSE	<i>if the statement contradicts the information</i>
NOT GIVEN	<i>if there is no information on this</i>

- 20 The FAA was created as a result of the introduction of the jet engine.
- 21 Air Traffic Control started after the Grand Canyon crash in 1956.
- 22 Beacons and flashing lights are still used by ATC today.
- 23 Some improvements were made in radio communication during World War II.
- 24 Class F airspace is airspace which is below 365m and not near airports.
- 25 All aircraft in Class E airspace must use IFR.
- 26 A pilot entering Class C airspace is flying over an average-sized city.

Write the correct letter, **A–G**, in boxes 27–30 on your answer sheet.

- 27 Researchers with differing attitudes towards telepathy agree on
- 28 Reports of experiences during meditation indicated
- 29 Attitudes to parapsychology would alter drastically with
- 30 Recent autoganzfeld trials suggest that success rates will improve with

- | |
|--|
| <ul style="list-style-type: none">A the discovery of a mechanism for telepathy.B the need to create a suitable environment for telepathy.C their claims of a high success rate.D a solution to the problem posed by random guessing.E the significance of the ganzfeld experiments.F a more careful selection of subjects.G a need to keep altering conditions. |
|--|

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

Write your answers in boxes 31–40 on your answer sheet.

Telepathy Experiments			
Name/Date	Description	Result	Flaw
Ganzfeld studies 1982	Involved a person acting as a 31, who picked out one 32 from a random selection of four, and a 33, who then tried to identify it.	Hit-rates were higher than with random guessing.	Positive results could be produced by factors such as 34 or 35
Autoganzfeld studies 1987	36 were used for key tasks to limit the amount of 37 in carrying out the tests.	The results were then subjected to a 38	The 39 between different test results was put down to the fact that sample groups were not 40 (as with most ganzfeld studies).

Do the following statements agree with the information given in Reading Passage 1?

In boxes 1–5 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

- 1 The Romans' shipbuilding skills were passed on to the Greeks and the Egyptians.
- 2 Skilled craftsmen were needed for the mortise and tenon method of fixing planks.
- 3 The later practice used by Mediterranean shipbuilders involved building the hull before the frame.
- 4 The Romans called the Mediterranean Sea *Mare Nostrum* because they dominated its use.
- 5 Most rowers on ships were people from the Roman army.

Warships and merchant ships

Warships were designed so that they were **6** and moved quickly. They often remained afloat after battles and were able to sail close to land as they lacked any additional weight. A battering ram made of **7** was included in the design for attacking and damaging the timber and oars of enemy ships. Warships, such as the 'trireme', had rowers on three different **8**

Unlike warships, merchant ships had a broad **9** that lay far below the surface of the sea. Merchant ships were steered through the water with the help of large rudders and a tiller bar. They had both square and **10** sails. On merchant ships and warships, **11** was used to ensure rowers moved their oars in and out of the water at the same time.

Quantities of agricultural goods such as **12** were transported by merchant ships to two main ports in Italy. The ships were pulled to the shore by **13** When the weather was clear and they could see islands or land, sailors used landmarks that they knew to help them navigate their route.

Questions 14–19

Reading Passage 2 has eight sections, **A–H**.

Which section contains the following information?

*Write the correct letter, **A–H**, in boxes 14–19 on your answer sheet.*

- 14** an explanation for weapons being left behind in the mountains
- 15** a reference to the physical difficulties involved in an archaeological expedition
- 16** an explanation of why less food may have been available
- 17** a reference to the possibility of future archaeological discoveries
- 18** examples of items that would have been traded
- 19** a reference to the pressure archaeologists are under to work quickly

Interesting finds at an archaeological site

Organic materials such as animal skins and textiles are not discovered very often at archaeological sites. They have little protection against **20** , which means that they decay relatively quickly. But this is not always the case. If temperatures are low enough, fragile artefacts can be preserved for thousands of years.

A team of archaeologists have been working in the mountains in Oppland in Norway to recover artefacts revealed by shrinking ice cover. In the past, there were trade routes through these mountains and **21** gathered there in the summer months to avoid being attacked by **22** on lower ground. The people who used these mountains left things behind and it is those objects that are of interest to archaeologists.

Questions 23 and 24

Choose **TWO** letters, **A–E**.

Write the correct letters in boxes 23 and 24 on your answer sheet.

Which **TWO** of the following statements does the writer make about the discoveries of Barrett's team?

- A** Artefacts found in the higher mountain passes were limited to skiing equipment.
- B** Hunters went into the mountains even during periods of extreme cold.
- C** The number of artefacts from certain time periods was relatively low.
- D** Radiocarbon dating of artefacts produced some unreliable results.
- E** More artefacts were found in Oppland than at any other mountain site.

Questions 25 and 26

Choose **TWO** letters, **A–E**.

Write the correct letters in boxes 25 and 26 on your answer sheet.

Which **TWO** of the following statements does the writer make about the Viking Age?

- A** Hunters at this time benefited from an increased demand for goods.
- B** The beginning of the period saw the greatest growth in the wealth of Vikings.
- C** Vikings did not rely on ships alone to transport goods.
- D** Norwegian towns at this time attracted traders from around the world.
- E** Vikings were primarily interested in their trading links with the Middle East.

In boxes 27–32 on your answer sheet, write

TRUE	<i>if the statement agrees with the information</i>
FALSE	<i>if the statement contradicts the information</i>
NOT GIVEN	<i>if there is no information on this</i>

- 27 The Cambridge scientists' discovery of the 'thermometer molecule' caused surprise among other scientists.
- 28 The target for agricultural production by 2050 could be missed.
- 29 Wheat and rice suffer from a rise in temperatures.
- 30 It may be possible to develop crops that require less water.
- 31 Plants grow faster in sunlight than in shade.
- 32 Phytochromes change their state at the same speed day and night.

Questions 33–37

Reading Passage 3 has eight sections, **A–H**.

Which section contains the following information?

*Write the correct letter, **A–H**, in boxes 33–37 on your answer sheet.*

- 33 mention of specialists who can make use of the research findings
- 34 a reference to a potential benefit of the research findings
- 35 scientific support for a traditional saying
- 36 a reference to people traditionally making plans based on plant behaviour
- 37 a reference to where the research has been reported

Questions 38–40

Complete the sentences below.

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

Write your answers in boxes 38–40 on your answer sheet.

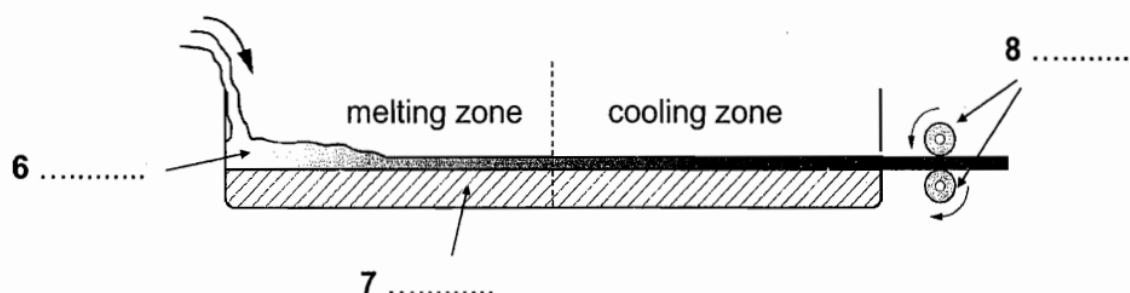
- 38 Daffodils are likely to flower early in response to weather.
- 39 If ash trees come into leaf before oak trees, the weather in will probably be wet.
- 40 The research was carried out using a particular species of

IELT 8, test 2, passage 1.

Early methods of producing flat glass

Method	Advantages	Disadvantages
1	<ul style="list-style-type: none"> Glass remained 2 	<ul style="list-style-type: none"> Slow 3
Ribbon	<ul style="list-style-type: none"> Could produce glass sheets of varying 4 Non-stop process 	<ul style="list-style-type: none"> Glass was 5 20% of glass rubbed away Machines were expensive

Pilkington's float process



In boxes 9–13 on your answer sheet, write

TRUE	<i>if the statement agrees with the information</i>
FALSE	<i>if the statement contradicts the information</i>
NOT GIVEN	<i>if there is no information on this</i>

- 9** The metal used in the float process had to have specific properties.
- 10** Pilkington invested some of his own money in his float plant.
- 11** Pilkington's first full-scale plant was an instant commercial success.
- 12** The process invented by Pilkington has now been improved.
- 13** Computers are better than humans at detecting faults in glass.

Reading Passage 2 has six paragraphs, **A–F**.

*Choose the correct heading for paragraphs **B** and **D–F** from the list of headings below.*

*Write the correct number, **i–ix**, in boxes 14–17 on your answer sheet.*

List of Headings

- i** Predicting climatic changes
- ii** The relevance of the Little Ice Age today
- iii** How cities contribute to climate change
- iv** Human impact on the climate
- v** How past climatic conditions can be determined
- vi** A growing need for weather records
- vii** A study covering a thousand years
- viii** People have always responded to climate change
- ix** Enough food at last

Example
Paragraph A

Answer
viii

14 Paragraph B

Example
Paragraph C

Answer
v

15 Paragraph D

16 Paragraph E

17 Paragraph F

Weather during the Little Ice Age

Documentation of past weather conditions is limited: our main sources of knowledge of conditions in the distant past are **18** and **19** We can deduce that the Little Ice Age was a time of **20** , rather than of consistent freezing. Within it there were some periods of very cold winters, others of **21** and heavy rain, and yet others that saw **22** with no rain at all.

A climatic shifts

B ice cores

C tree rings

D glaciers

E interactions

F weather observations

G heat waves

H storms

I written accounts

Questions 23–26

Classify the following events as occurring during the

- A** Medieval Warm Period
- B** Little Ice Age
- C** Modern Warm Period

Write the correct letter, **A**, **B** or **C**, in boxes 23–26 on your answer sheet.

- 23** Many Europeans started farming abroad.
- 24** The cutting down of trees began to affect the climate.
- 25** Europeans discovered other lands.
- 26** Changes took place in fishing patterns.

List of Headings

- i** The difficulties of talking about smells
- ii** The role of smell in personal relationships
- iii** Future studies into smell
- iv** The relationship between the brain and the nose
- v** The interpretation of smells as a factor in defining groups
- vi** Why our sense of smell is not appreciated
- vii** Smell is our superior sense
- viii** The relationship between smell and feelings

- 27** Paragraph **A**
- 28** Paragraph **B**
- 29** Paragraph **C**
- 30** Paragraph **D**
- 31** Paragraph **E**
- 32** Paragraph **F**

Questions 33–36

Choose the correct letter, **A**, **B**, **C** or **D**.

Write the correct letter in boxes 33–36 on your answer sheet.

33 According to the introduction, we become aware of the importance of smell when

- A** we discover a new smell.
- B** we experience a powerful smell.
- C** our ability to smell is damaged.
- D** we are surrounded by odours.

34 The experiment described in paragraph B

- A** shows how we make use of smell without realising it.
- B** demonstrates that family members have a similar smell.
- C** proves that a sense of smell is learnt.
- D** compares the sense of smell in males and females.

35 What is the writer doing in paragraph C?

- A** supporting other research
- B** making a proposal
- C** rejecting a common belief
- D** describing limitations

36 What does the writer suggest about the study of smell in the atmosphere in paragraph E?

- A** The measurement of smell is becoming more accurate.
- B** Researchers believe smell is a purely physical reaction.
- C** Most smells are inoffensive.
- D** Smell is yet to be defined.

37 Tests have shown that odours can help people recognise the belonging to their husbands and wives.

38 Certain linguistic groups may have difficulty describing smell because they lack the appropriate

39 The sense of smell may involve response to which do not smell, in addition to obvious odours.

40 Odours regarded as unpleasant in certain are not regarded as unpleasant in others.

- 1 Polar bears suffer from various health problems due to the build-up of fat under their skin.
- 2 The study done by Liu and his colleagues compared different groups of polar bears.
- 3 Liu and colleagues were the first researchers to compare polar bears and brown bears genetically.
- 4 Polar bears are able to control their levels of 'bad' cholesterol by genetic means.
- 5 Female polar bears are able to survive for about six months without food.
- 6 It was found that the bones of female polar bears were very weak when they came out of their dens in spring.
- 7 The polar bear's mechanism for increasing bone density could also be used by people one day.

Reasons why polar bears should be protected

People think of bears as unintelligent and 8

However, this may not be correct. For example:

- In Tennoji Zoo, a bear has been seen using a branch as a 9 This allowed him to knock down some 10
- A wild polar bear worked out a method of reaching a platform where a 11 was located.
- Polar bears have displayed behaviour such as conscious manipulation of objects and activity similar to a 12

Bears may also display emotions. For example:

- They may make movements suggesting 13 if disappointed when hunting.
- They may form relationships with other species.

List of Headings

- i The areas and artefacts within the pyramid itself
- ii A difficult task for those involved
- iii A king who saved his people
- iv A single certainty among other less definite facts
- v An overview of the external buildings and areas
- vi A pyramid design that others copied
- vii An idea for changing the design of burial structures
- viii An incredible experience despite the few remains
- ix The answers to some unexpected questions

14 Paragraph A

15 Paragraph B

16 Paragraph C

17 Paragraph D

18 Paragraph E

19 Paragraph F

20 Paragraph G

Choose **ONE WORD ONLY** from the passage for each answer.

Write your answers in boxes 21–24 on your answer sheet.

The Step Pyramid of Djoser

The complex that includes the Step Pyramid and its surroundings is considered to be as big as an Egyptian **21** of the past. The area outside the pyramid included accommodation that was occupied by **22** , along with many other buildings and features.

A wall ran around the outside of the complex and a number of false entrances were built into this. In addition, a long **23** encircled the wall. As a result, any visitors who had not been invited were cleverly prevented from entering the pyramid grounds unless they knew the **24** of the real entrance.

Questions 25–26

Choose **TWO** letters, **A–E**.

Write the correct letters in boxes 25 and 26 on your answer sheet.

Which **TWO** of the following points does the writer make about King Djoser?

- A** Initially he had to be persuaded to build in stone rather than clay.
- B** There is disagreement concerning the length of his reign.
- C** He failed to appreciate Imhotep's part in the design of the Step Pyramid.
- D** A few of his possessions were still in his tomb when archaeologists found it.
- E** He criticised the design and construction of other pyramids in Egypt.

Write the correct letter in boxes 27–30 on your answer sheet.

27 The first paragraph tells us about

- A** the kinds of jobs that will be most affected by the growth of AI.
- B** the extent to which AI will alter the nature of the work that people do.
- C** the proportion of the world's labour force who will have jobs in AI in the future.
- D** the difference between ways that embodied and disembodied AI will impact on workers.

28 According to the second paragraph, what is Stella Pachidi's view of the 'knowledge economy'?

- A** It is having an influence on the number of jobs available.
- B** It is changing people's attitudes towards their occupations.
- C** It is the main reason why the production sector is declining.
- D** It is a key factor driving current developments in the workplace.

29 What did Pachidi observe at the telecommunications company?

- A** staff disagreeing with the recommendations of AI
- B** staff feeling resentful about the intrusion of AI in their work
- C** staff making sure that AI produces the results that they want
- D** staff allowing AI to carry out tasks they ought to do themselves

30 In his recently published research, Ewan McGaughey

- A** challenges the idea that redundancy is a negative thing.
- B** shows the profound effect of mass unemployment on society.
- C** highlights some differences between past and future job losses.
- D** illustrates how changes in the job market can be successfully handled.

The 'algorithmic' of jobs

Stella Pachidi of Cambridge Judge Business School has been focusing on the 'algorithmic' of jobs which rely not on production but on **31**

While monitoring a telecommunications company, Pachidi observed a growing **32** on the recommendations made by AI, as workers begin to learn through the 'algorithm's eyes'. Meanwhile, staff are deterred from experimenting and using their own **33**, and are therefore prevented from achieving innovation.

To avoid the kind of situations which Pachidi observed, researchers are trying to make AI's decision-making process easier to comprehend, and to increase users' **34** with regard to the technology.

- | | | |
|----------------------|-----------------------|---------------------|
| A pressure | B satisfaction | C intuition |
| D promotion | E reliance | F confidence |
| G information | | |

- 35** Greater levels of automation will not result in lower employment.
- 36** There are several reasons why AI is appealing to businesses.
- 37** AI's potential to transform people's lives has parallels with major cultural shifts which occurred in previous eras.
- 38** It is important to be aware of the range of problems that AI causes.
- 39** People are going to follow a less conventional career path than in the past.
- 40** Authorities should take measures to ensure that there will be adequately paid work for everyone.

List of people

- | | |
|----------|----------------|
| A | Stella Pachidi |
| B | Hamish Low |
| C | Ewan McGaughey |