

HUMAT SIMULATION TEST 2
6 Reading passages
36 questions
72 minutes

TASK 1

Read the article below and choose the answer (A, B, C or D) for each question which fits best according to the text.

New insights into the brains of birds

Recent research suggests that the brains of birds, once generally assumed to be hard-wired to respond instinctively to given stimuli, are actually capable of flexible and even imaginative thinking. For example, a team of researchers from the University of Cambridge included an experiment in which a bird could see a

handling comorbidities may lead to more patient-centred asthma management, which may in turn lead to better outcomes.

In terms of environmental risk factors for asthma, the evidence is stronger for childhood asthma, although this is partly related to the greater attention that childhood asthma has received from the research community. The global epidemic of asthma is continuing, especially in low- to middle-income countries, although it has subsided in some high-income countries. Epidemiological research has helped to uncover some important environmental factors that trigger the disease, but the role of these as an underlying cause of asthma remains for the most part unknown.

Research into interactions between potential factors underlying the disease may gradually help to tease out the causes, however. There is therefore an urgent need to further investigate the complex mechanisms driving the relationship between environmental and genetic determinants in order to identify high-risk groups and key modifiable exposures. Given the long-term impact of both childhood and adult asthma, we would argue that to reduce the health burden of asthma, the emphasis going forward should be firmly on improving not only short-term symptoms, but also the long-term respiratory and other health outcomes.

10 What point does the writer make about comorbidities?

- A. These are probably more related to age than to asthma.
- B. Treating these can help with the treatment of asthma

18 When making the case for mining on the Moon, the writer suggests that

- A. it is unlikely to bring financial returns.
- B. it has to be a long-term undertaking
- C. it needs to be very carefully regulated.
- D. it will always need external investment.

TASK 4

The future of food: urban rooftop farms

In recent years, urban rooftop farming (URF) has been experiencing increasing popularity, although it is true to say that most URF initiatives have been motivated by social and educational factors, rather than the aim of creating large-scale food production systems. There is a reasonable amount of literature available on urban rooftop farming, but most of it focuses on small-scale, community-oriented operations. This study of URF sets out to assess the potential of large-scale, commercial operations. The study is based on a rooftop farm on the top of an exhibition hall in Paris. Here, produce such as strawberries, salad and herbs is grown in soil-free plastic columns.

According to project leader Pascal Hardy, the rooftop farm is a clean, productive and sustainable model of agriculture that can eventually make a real contribution to the social, economic and environmental resilience of big cities. Hardy, an engineer and sustainable development consultant, began experimenting with vertical farming and aeroponic growing towers

before. No pesticides or fungicides are needed, no soil is exhausted, and the water that gently showers the farming for the same yield. This automated process can be monitored and controlled, on site or remotely,

y @h up with horticulture projects, with the aim of covering at least 100 hectares of rooftops, walls and facades with greenery, including fruit and vegetables. Ingenious projects are underway elsewhere. Strawberries are being grown in disused shipping containers and mushrooms in underground car parks. Not all techniques, however, are environmentally friendly: ultra-intensive, ten-storey indoor farms in the USA employ banks of LED lighting and are major consumers of energy. This is in stark contrast to urban aeroponic farming, where the equipment is highly portable and can be installed on virtually any flat surface. It also happens to consume a tiny fraction of the electricity used by some techniques. Produce grown aeroponically typically sells at prices that, while generally higher than those of intensive agriculture, are lower than soil-based organic growers.

Much of the produce grown on urban farms is suited to the summer months, and farmers are restricted by what can be planted. At present, cultivating fruit trees and long-beans take up a disproportionate amount of space for the financial return on them. Nevertheless, given time and the engagement of urban residents, inner-city agricultural projects have the potential to prompt people to think differently both about cities, by breaking down their traditional geography of different zones for

19 The writer feels that previous research into urban rooftop farming has

- A. ignored the role of food insecurity as a key problem.
- B. been largely focussed on non-commercial initiatives
- C. been lacking in detail about the cultivation methods.
- D. tended to measure success purely in financial terms.

20 What do we learn about the attitude of Pascal Hardy towards his project?

- A. He is indifferent to criticisms of it.
- B. He is ambitious about scaling it up.
- C. He is realistic about its future scope.
- D. He is wary of using certain spaces.

21 The writer suggests that his main criticism of intensive farming methods is

- A.

22 What claim does Pascal Hardy make about the food he grows and sells?

- A. He knows his customers personally.
- B. He is constantly there to inspect it.
- C. He guarantees consumers high quality
- D. He avoids the use of most fertilisers.

23 In the fifth paragraph, the writer praises this type of urban farming for its

- A. great versatility.
- B. low labour costs.
- C. rapid expansion.
- D. high profitability.

24 The writer's conclusion about urban farming is that

- A. it is unlikely that solutions for growing all crops can be found.
- B. persuading the public to get involved in projects is a challenge.
- C. it has implications beyond providing food for local residents.
- D. climate change is the greatest threat to its long-term success.

TASK 5

Climate miserabilism

At one time, the image of a lone polar bear standing on a fast-diminishing ice floe was a familiar metaphor for the threat posed by climate change. As carbon emissions belched into the atmosphere, rising

... niche and threatening them with starvation. The
... fallacy explored by Bjorn Lomborg
in his book, *False Alarm*. The main threat to polar bears, he claims came in the form of wild hunters. With the curbing of their activities, bear numbers have witnessed a marked increase. Seeking to protect them by reducing carbon dioxide emissions was perhaps more than slightly misguided – all that was needed was to stop shooting them.

...
is *Apocalypse Never* by Michael Shellenberger. Each explores the way in which climate policy is increasingly
... leading developed nations to make rash choices about remedial action. This, they argue, makes our predicament not better but worse. Lomborg challenges a

number of frequently heard claims, for example that the incidence of wildfires is massively increasing. He points to satellite data showing that the amount of land burnt has fallen by a quarter in the past two decades. As for extreme weather and the rising cost of flood damage, he notes that as a percentage of US GDP, flood losses today are a tenth of what they were in 1903.

Some may see such challenges as an attempt to play down the reality of climate change. A controversial argument is that we should pay more attention to adaptation, while focusing on research to find zero-carbon energy sources that have been falling as a share of global energy from 25% in 1900 to just 11% today and most of that is accounted for by traditional fuels like wood and dung.

the wherewithal to build sea defences to keep out rising sea levels, but highly vulnerable poorer ones do not. Much in the end hangs on whether you share his faith in how much headroom the world has available. Citing research by the economist Nordhaus, he suggests that a temperature rise of 4°C is possible without a lot of adaptation. holding out the possibility of geo-engineering as a form of emergency brake. Some will take this as an admission that the underlying thesis may be reckless.

development streak evident amongst environmentalists, provocatively making the case for such green energy more, he insists that in nuclear power the world

- 26** Lomborg and Shellenberger both feel that climate policies in developed countries
- A. may be counter-productive in terms of their wider aims.
 - B. tend to be based on demonstrably inaccurate data.
 - C. are inclined to focus too much on short-term measures.
 - D. are driven by the need to respond to natural disasters.
- 27** In the third paragraph, the writer suggests that Lomborg's views on tackling climate change
- A. reveal an underlying belief that the problem is exaggerated.
 - B. reflect his frustration with assumptions made by his critics.
 - C. include observations that are worthy of further consideration.
 - D. place too much emphasis on certain alternative technologies.
- 28** What is the writer doing in the fourth paragraph?
- A. providing a balanced view of conflicting ideas.
 - B. revealing contradictions in certain arguments.
 - C. accounting for and reversing one recent trend.
 - D. avoiding discussion of issues of importance.
- 29** The writer suggests that, in his book, Stellenberger attempts to
- A. avoid discussion of issues of importance.
 - B. give a balanced view of conflicting ideas.
 - C. reveal contradictions in certain arguments.
 - D. account for and reverse one recent trend.
- 30** The word 'this' in the fifth paragraph refers to
- A. the speed with which something is happening.
 - B. the particular direction of a noticeable trend.
 - C. the strength of an argument being put forward.
 - D. the particular direction of a noticeable trend.

TASK 6

As the most carnivorous and only marine-living ursid, the polar bear (*Ursus maritimus*) is lone among bears

physiological adaptations that distinguish polar bears from terrestrial bears, which has made them dependent on the sea ice and may increase their vulnerability to climate change. As a consequence of living in this ever-changing marine habitat, polar bears occupy expansive home ranges that are considerably greater than those occupied by other ursids or predicted for similarly sized terrestrial carnivorous mammals. They also exhibit remarkable abilities to swim for extended distances.

However, long-distance movements, whether walking or swimming, necessitate substantial energetic resources to satisfy locomotor demands. Historically, sufficient resources were afforded through the availability of fatty, energy-dense seal prey, which could be hunted efficiently from the sea ice. Presently, the sea ice minimum extent across the Arctic is shrinking at a rate of 14% per decade, spring break-up is occurring earlier, and fall freeze-up is occurring later. This decline is likely reducing access to, and abundance of, seal prey.

Some previous studies of polar bears have reported that their energy costs from walking are greater than thought for other similarly sized mammals. Some of the models of polar bear metabolic rates wrongly predicted these would be relatively low, because of the sit-and-wait style of catching prey and its assumed ability to reduce metabolism while fasting.

‡ [https://doi.org/10.1016/j.jrta.2017.05.001](#)
the sea ice where they spend most or all of the year.

Our study measured the field metabolic rates (FMRs) of nine female polar bears during April 2014–2016 in the Beaufort Sea over 8 to 11 days during April over the course of three years. We captured the animals in order to fit video camera collars and sensors to determine activity and behavior in order to assess their field metabolic rates (or FMRs), that is the rate during periods of activity. Using our measures of daily FMR, we estimated that a solitary female bear on the spring sea ice would on average need to eat one adult or three subadult seals, or 19 seal pups, every 10–12 days to remain in energy balance. Polar bears put on the majority of their body fat in late spring and early summer and can reach a relative fatness of 1 kg of fat per kg of lean body mass. To attain this body condition, bears would either need to reduce their energy demands or

- 31 What do we learn about polar bears in the first paragraph?
- A. Compared to all species of bear, an individual polar bear has the largest territory.
 - B. They are able to swim further than any other kind of meat-eating land mammal.
 - C. Of all arctic mammals, they are able to cope best with the local conditions.
 - D. They have undergone more evolutionary changes than any other bear species.
- 32 What does the phrase 'this decline' refer to in the second paragraph?
- A. the break-up of ice in spring
 - B. the area covered by frozen sea
 - C. the availability of food resources
 - D. the distances polar bears travel
- 33 In the third paragraph, the writer makes the point that earlier research into polar bears
- A. gave too much attention to their metabolic rates during periods of activity.
 - B. made an incorrect assumption about their metabolic rate when hunting
 - C. was unhelpful in comparing their metabolic rates with that of other animals.
 - D. produced confusing data on their metabolic rates at different times of year.
- 34 What do we learn about the researchers' approach from the fourth paragraph?
- A. u
 - B. u
 - C. They came into close proximity with the bears
 - D. They extended their original study period.
- 35 One key finding was that the particular group of bears they studied
- A. had dramatic fluctuations in their annual metabolic rates.
 - B. proved to be less efficient swimmers than expected.
 - C. displayed hunting techniques that were considered atypical.
 - D. used more energy than their food intake would suggest
- 36 What point is made about polar bears in the final paragraph?
- A. They will mostly be unable to cope with the changing environment.
 - B. They will soon be competing with each other for food.
 - C. Their current sources of prey are likely to continue to diminish.
 - D. They will probably find a way to adjust to present conditions.